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Report of the  
Ontario Council  
of Health on

# Annex "C"

# Health Manpower

Ontario Department of Health  
Honourable Thomas L. Wells, Minister



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# HEALTH MANPOWER

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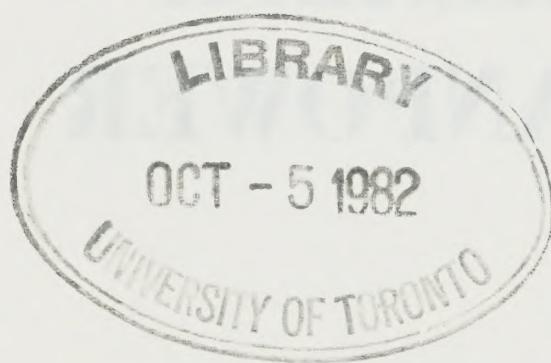
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**REPORT OF  
THE ONTARIO  
COUNCIL OF HEALTH  
on  
HEALTH  
MANPOWER**

**ANNEX "C"**

**JUNE 1969**

**ONTARIO DEPARTMENT OF HEALTH  
Honourable Thomas L. Wells, Minister**



Produced for the  
**ONTARIO COUNCIL OF HEALTH**  
by the  
**COMMUNICATIONS BRANCH**  
**ONTARIO DEPARTMENT OF HEALTH**

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# FOREWORD

Reports on Physician and Dental Manpower were presented to the Ontario Council of Health in June 1968, by the Committee on Health Manpower, and a Report on Nursing Manpower was presented in June 1969. These three reports were received by the Council and their recommendations approved with modification or amendment in some instances.

These reports represent the first phase of studies in these three manpower areas. Broadly speaking, they indicate that Ontario should become more self-sufficient in the production of its own doctors, dentists, and nurses, and should rely less on immigration from abroad. Recommendations suggest that new schools of medicine and dentistry be established, while holding the line on any increase in the already established targets for the output of nurses until further field studies can be made. Efforts to increase the productivity of these three kinds of personnel through the use of auxiliary or assistant staff are also recommended. The study of "Health Care Delivery Systems" and the establishment of "Community Health Centres" were also strongly supported. In dentistry, it was suggested that increased fluoridation, and aid to the "Social Assistance" group in obtaining dental care, be undertaken.

The Committee on Health Manpower is continuing to study all categories of health personnel. Many other groups remain to be examined. In addition, the medical profession is being studied in greater depth, as is the relative importance of various specialties in contrast to general or family practice more firmly established. The ultimate solution of many of the problems concerning numbers of personnel, however, may well not be possible until the "Health Care Delivery" framework into which they must fit is more precisely determined.

Readers are reminded that while the Ontario Council of Health has endorsed the reports as printed, it has done so without formally attempting to co-ordinate the views and recommendations presented with those presented by other Committees of Council. In view of this, it is possible that Council could adopt a modified position when the influence of recommendations by other Committees is assessed.



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# ACKNOWLEDGEMENTS

Technical support in the preparation of this report was provided through the auspices of the Research and Planning Branch of the Ontario Department of Health. Under Dr. G. W. Reid, Director, the following staff members worked with the Committee:

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Assistance was also given by Dr. W. E. Armour of the Ontario Medical Association.

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Secretary-Treasurer, Ontario Dental Association, and Registrar-Secretary, Royal College of Dental Surgeons of Ontario

Dr. G. Lie

Orthodontist

# *Recommendations*



# RECOMMENDATIONS

The recommendations of this report are listed by category to provide a quick guide for the reader. The Ontario Council of Health has approved the recommendations as presented or has taken action as indicated.

## Medical Manpower

### General Trends in Health Care Affecting Physician Manpower

Recommendation 1.

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### Medical Immigrants

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# *Report of the Committee*



# ***Section I***

## ***PHYSICIAN MANPOWER***



## **SECTION I**

### ***Physician Manpower***

#### **Introduction**

The Report on Physician Manpower was presented to Council in June 1968. The report, as presented at that time, forms Appendix A of this section. It is preceded by the Conclusions and Recommendations derived from the report which attempt to summarize in capsule form the thinking which led up to each recommendation and also the general philosophy of the whole report.

#### **Conclusions and Recommendations**

The Committee is anxious that the Province reduce its dependence on medical immigration both from other countries and other provinces. It is felt that existing Faculties of Medicine should be encouraged and provided with the means to expand their total admissions beyond the presently planned intake by as many students as are compatible with maintaining proper educational standards and available clinical facilities. New health sciences centres may also be needed. The conditions necessary for the operation of any health sciences centre are that it must be part of a multi-faculty university and be situated in an area of sufficiently large and dense population to ensure an adequate number of patients and doctors to participate in the educational programme.

The Committee considered that a new committee for the study of health care delivery systems should be established and that the study of this problem should be encouraged at universities. The

Committee feels that research operations should be supported in the areas of group practice, community health centres and the increased utilization of auxiliary health personnel. High priority should also be given to the study of assistants of various kinds to work with doctors. Economic involvement of doctors in the maintenance of hospital efficiency is also thought to be highly desirable.

## **I. GENERAL TRENDS IN HEALTH CARE AFFECTING PHYSICIAN MANPOWER**

### *RECOMMENDATION 1*

*THAT the projected needs for physicians in Ontario should be considered from five main points of view;*

- a. recognition that great advantages for the people should be derived from the application of scientific advances in the field of health;*
- b. recognition that current demand for health services has outstripped supply;*
- c. recognition that a capacity to deliver an improved quality of health care is dependent upon new and more efficient systems of delivering health care;*
- d. recognition that future needs for physicians are inseparable from future needs for members of the allied health professions and the health technologies, and health service technicians;*
- e. recognition that an increasing proportion of doctors will enter teaching, administration and research and will not practise.*

## **II. TO LESSEN OUR DEPENDENCE ON MEDICAL IMMIGRATION**

### **Comment**

Evidence coming to the attention of the Committee, showed that during the past four years for which data was available, medical

immigration has been steadily climbing to the point where in 1967 it was almost equal to the registration from Ontario medical schools. During 1967, 108 registered doctors came to Ontario from other Canadian provinces, 139 came here from other English speaking countries such as the United States, Australia, New Zealand and South Africa, while 33 came from yet other sources. This total of 280 doctors trained outside Ontario compares to 285 who were trained and registered from Ontario medical schools in that year. (In 1968, the number of registrations from sources outside Ontario reached 334, while Ontario trained registration was only 278. Of those doctors from outside Ontario, 116 came from other Canadian provinces.)

The Committee was of the opinion that, while Ontario owed much to its immigrant doctors, it was not wise to rely on a level of immigration of this magnitude in order to supply our requirements. In practice, this would mean calculating the required output capacity of our own medical schools in such a way that an allowance for only 100 immigrant doctors would be taken into account. In this manner, the number of positions which attracted immigrant doctors to this province would be gradually reduced and the flow would diminish on a voluntary basis. The Committee felt that we should not draw any doctors from the other Canadian provinces and that those from other countries should be calculated at a level of only 100 per annum. The recommendations following from this were:

#### *RECOMMENDATION 2*

*THAT Ontario should avoid dependence upon foreign countries and other provinces for 49 per cent of newly registered physicians.*

#### *RECOMMENDATION 3*

*THAT Ontario should count on a maximum annual input of 100 doctors per year as immigrants from other countries. (The Economic Analysis Branch of the Department of Treasury and Economics projects a flat rate of 30,000 immigrants, net, per annum, to 1991 in the population projection.)*

### **Doctors from Other Provinces**

#### *RECOMMENDATION 4*

*THAT Ontario should not depend upon or take into its calculations doctors from other provinces moving to Ontario to practise.*

### III. THE DOCTOR TO POPULATION OBJECTIVE RATIO DURING THE NEXT FIFTEEN YEARS

#### Comment

Studies of the gross doctor-population ratio in Ontario and elsewhere during the last 30 years indicate a gradual long-range improvement. The gross ratio in Ontario at the beginning of the forties was one doctor to every 900 persons. This has now improved to about 1/800, and our objective for the future is to bring it to a level of 1/680 by 1986. This ratio represents the supply when *all* doctors are included—residents, interns, teachers, and researchers, etc. Such ratios, however, give us only a partial picture of what might be, since the employment of *Doctor's Assistants* of all kinds can greatly improve the productivity of the individual physician, a development which is being actively examined and encouraged. Nevertheless, the Committee was of the opinion that 1/680 was a reasonable objective, and with a planned increase in medical school output to compensate for the suggested decrease in medical immigration it should be possible to achieve this level by 1986. Recommendations flowing from this objective are as follows:

#### Doctor-Population Ratio — 1986

##### *RECOMMENDATION 5*

*THAT by 1986 Ontario should ensure that there be a net ratio of one practising doctor per 900 people, excluding interns and residents, and an overall gross doctor/population ratio in 1986 of 1:675-680.*

In practice, this objective could be brought about by the following recommendations:

#### Existing Medical School Output

##### *RECOMMENDATION 6*

*THAT existing Faculties of Medicine should be encouraged and provided the means to expand their total admission beyond the presently planned intake by as many students as are compatible with maintaining proper educational standards and availability of clinical facilities, hopefully a total of 20 new as yet unplanned admissions by 1970, reaching 35 by 1978.*

## New Health Sciences Centres

### *RECOMMENDATION 7*

*THAT in respect to new health sciences centres:*

- a. a new health sciences centre (in addition to McMaster) should become operational at the earliest possible date, graduating doctors not later than 1978, and capable of as rapid progression as possible to a graduating class of 96 doctors annually by 1983;*
- b. continuing consideration should be given to preparations for a second health sciences centre to become operational in the mid-eighties;*
- c. provision for dental facilities should be included in health sciences centres. (To be reviewed.)\**

## Location of a New Faculty of Medicine

### *RECOMMENDATION 8*

*THAT in respect to the location of a new faculty of medicine, the following conditions should be fulfilled:*

- a. it must be part of a multi-faculty university;*
- b. it must be situated in an area of sufficiently large and dense population to ensure an adequate number of patients and doctors participating in the medical education programme;*
- c. the university must have adequate control of the major teaching hospital to meet its service, educational, and research responsibilities.*

\* Council was prepared to accept Recommendation 7 on the basis of the information available (June 1968), but wished to review the recommendation as further information becomes available.

## IV. THE HEALTH CARE DELIVERY SYSTEM

### Comment

The Manpower Committee considered that study and evaluation of the Health Care Delivery System was central to the more precise determination of the numbers of health personnel in each category that would be required by the Province. It is apparent that, until the roles to be played by each category are more precisely defined, it is difficult to know the function that is to be allotted to a type of personnel with a specific name. The term "doctor" for instance covers a wide range of differently trained persons working in different settings under different conditions. The differentiation of the Family Physician from the Specialist, and of each specialist field from each other specialist field, requires a differently planned delivery pattern for the skills of each type of doctor. The same comment applies to nursing and many other health professions. Ultimately, as well, all these patterns of delivery must fit together into one grand design. The study of this whole matter is an extremely difficult and time-consuming process, which the Committee dealt with in the following recommendations:

### Study of Health Services System and Education

#### *RECOMMENDATION 9*

*THAT the Research Committee and the Education Committee should consider advising the Council of Health to encourage and support, at universities:*

- a. study of systems of delivering health services;*
- b. study and planning of health education, as it will relate to the new systems of delivering health services, for doctors and members of the allied health professions and technologies.*

### A New Committee of Council of Health

#### *RECOMMENDATION 10*

*THAT a primary committee be established to study systems of health care delivery, with the Chairman of Council as Chairman, and chairmen of other prime committees as members, and,*

*THAT the Executive Committee study the matter, to develop it in relation to the Chairmen of Committees and the Executive Committee.*

### Community Health Centres

#### *RECOMMENDATION 11*

*THAT Community Health Centres, group practice, and increased utilization of allied health professions and auxiliary personnel, should be supported as research operations in the interest of conservation of medical manpower and improved care of the sick. (Accepted in principle.)\**

### Doctors' Assistants

#### *RECOMMENDATION 12*

*THAT, in respect to doctors' assistants:*

- a. the preliminary study of the role and need for doctors' assistants by the Research and Planning Branch should be given high priority;*
- b. the potential role and scope, as doctors' assistants, of the medical assistant, the public health nurse, the registered nurse, the outpost nurse, the midwife, the ophthalmic technician and the surgical assistant technician and undoubtedly others, should be considered with the appropriate groups from health sciences centres and particularly faculties of medicine and of nursing, appropriate Ontario Medical Association divisions, the Ontario Chapter of the College of Family Physicians of Canada, the Ontario Hospital Association, the Ontario Public Health Association, and the Registered Nurses' Association of Ontario.*

\* Recommendation 11 was accepted in principle and referred to the new committee on systems of health care delivery.

## Hospitals and Manpower

*RECOMMENDATION 13  
THAT physicians should participate:*

- a. with economic responsibility in the government and management of hospitals;*
- b. with economic incentives and rewards based on a share of the savings resulting from increased effectiveness and efficiency in the utilization of hospitals.\**

\* Recommendation 13 was referred to the new committee on systems of health care delivery for the careful consideration that it obviously requires.

*Appendix A*  
**BACKGROUND PAPER ON**  
**PHYSICIAN MANPOWER**



## APPENDIX A

### ***Background Paper on Physician Manpower***

The increasing level of general education and the universality of state-supported health and hospital insurance have led to rising expectations of what is expected from health services by the population of Canada, and Ontario is no exception. In fact, application of actual and potential advances in science to the daily care of the sick can provide enormous benefits to mankind. Achievement of this objective is not possible by simply allocating more dollars to health research and health services; already the health industry ranks third or fourth as an employer of staff among the industries in North America. The system involved in delivering health services, and of maintaining health, must be revised and redeveloped to ensure effective and efficient use of health manpower. The Committee has used as a starting point the conviction that all citizens of Ontario are entitled to the best available health service.

At this time, 1968, the consumer, the patient, the doctor, the nurse, and the dentist, can each testify to local health manpower shortages, to maldistribution and improper usage of existing personnel. The term health manpower is used as all-embracing; it includes the three professions of medicine, nursing, and dentistry, the paramedical groups and the whole range of technologists, technicians, assistants and aides.

The Manpower Committee undertook its task with the understanding and assurance that the Research and Planning Branch would bring forward data, proposals, and statistical studies. It turns out that the magnitude and complexity of the health manpower problem in

Ontario is matched by the paucity and inadequacy of the available data concerning health manpower, and we refer at this time particularly to doctors, nurses, and dentists. During the period the Committee has been working, the Research and Planning Branch of the Department of Health has been developing a staff, and the Economics Branch of the Treasury has been developing an official Ontario Government fertility rate and population projection. The management of the fertility rate data has apparently offered some difficulties, for the population projection became available only in the last three weeks. Concurrently also, the Canadian Medical Association figures have become available, bearing upon the total number, age, and professional activity of the doctors in Canada, and in Ontario—but not their geographical distribution.

For these and other reasons, the report of the Manpower Committee will vary greatly in the depth it has achieved in its study of these three professions (doctors, dentists, and nurses). The Manpower Committee is grateful and extends its thanks to Dr. Harding le Riche and Dr. Fred Mott for their help.

Three site visits have been made, to the Kaiser Health Plan in Oakland, California, to the Winnipeg Clinic, and to the Sault Ste. Marie and District Community Health Centre. The Chairman and Dr. Grainger Reid spent two days in Washington visiting the U.S. Department of Health, Education, and Welfare.

The Manpower Committee wishes to record its recognition and appreciation of the major effort made by the Research and Planning Branch in the face of the difficulties recorded, as well as discharging their responsibilities to the other Committees; in particular we acknowledge the indispensable assistance of Dr. Reid, Mr. Clarkson, Dr. Lang and Dr. Smiley.

Our major studies have been with regard to manpower in Dentistry, Medicine, and Nursing, and from this endeavour a number of factors have emerged leading to conclusions generally applicable to Medicine, Dentistry, and Nursing.

## **1. ADVANCES IN SCIENCE AND IMPROVED CARE OF PATIENTS**

The application of advances in science—research breakthroughs—to the care of the sick is delayed excessively because of lack of qualified manpower, and facilities, e.g.:

- a. Dental care for children and fluoridation,
- b. The modern laboratory investigation and treatment of hypertension,
- c. The nursing care of "coronary" patients supported by modern electronic computer controlled technology.

## **2. AUXILIARY PERSONNEL**

Doctors, dentists, and nurses, are hindered from devoting their unique skills and knowledge to major problems which only they can manage. Traditional, legal or economic requirements lead doctors, dentists, and nurses, to perform duties which could be equally well or better carried out by auxiliary personnel with less training and working under their supervision, e.g.:

- a. Doctors: Assistants:
  - public health nurses
  - outpost nurses (Dalhousie)
  - technicians
  - midwives
  - ophthalmic technicians
  - et al*
- b. Dentists: Dental Hygienists
  - Dental Therapists
  - Dental Associates
- c. Nurses: Registered nursing assistants
  - Operating room technicians
  - Psychiatric nurses
  - et al*

## **3. SHORTAGES OF DOCTORS, DENTISTS, AND NURSES**

These shortages exist in various parts of the Province of Ontario and with varying degrees of severity for each profession in various areas. Maldistribution of doctors, nurses, and dentists, is a fact; in addition, in centres generally regarded as most attractive by doctors, nurses, and dentists (such as Toronto), the public finds it difficult and from time to time impossible to obtain the services of a first-contact physician; hospitals must import nurses from the Philippines and the United Kingdom to enable them to remain open and fully

operational; children lack dental care. The rural poor, and rural people generally in sparsely populated low income areas, are disadvantaged by scarcity or total absence of doctors and dentists; northern Ontario and eastern Ontario are examples.

#### **4. THE HOSPITAL – THE INSTITUTIONAL CENTRE OF MEDICAL CARE**

“Since the hospital is emerging as the institutional centre of modern medical care (in 1960, in the U.S.A., hospitals employed about 65% of all health service personnel and by 1970, the proportion will probably rise to 75%) it is the most *visible* site of our manpower difficulties.” (Darley)

The increasing numbers of ambulatory patients turning to the emergency department and the outpatient clinics of hospitals for care, emergency and *elective*, is conspicuously evident; this new demand reflects delays as long as weeks or months in obtaining an appointment with a doctor, or unavailability of a doctor on Wednesdays, the weekends and at night.

The critical shortage of nurses endangers patient care and, particularly in July and August, results in closed beds and non-functioning operating rooms. Variably, shortages of rehabilitation therapists or technologists or technicians of one kind or another also endanger the efficiency of patient care.

The situation is at hand when hospitals in Ontario without an intern staff, and presently supplying 24-hour service in the emergency department by a physician, may be unable to do so.

#### **5. ASSUMPTIONS AND PROJECTIONS OF MANPOWER NEEDS**

The Manpower Committee, like other similar Committees, has evolved a set of assumptions which it judges will govern the effective demand for health manpower in the future.

- a. The rising expectations of the people of Ontario for health services will be met.
- b. The Government of Ontario will be able to continue to provide financial support for comprehensive health care of high quality for all the people of Ontario, regardless of the capacity of the individual to pay.

- c. The need will be met of the increasing population as it is projected, and particularly the need of the increasing number of people under five and over 65 who require more health services than other age groups.

## **6. ADVANCING HEALTH SCIENCE AND INCREASED NEED FOR MANPOWER**

The need for increased manpower will be in part because of the increasing range of medical science creating new diagnostic and treatment techniques, i.e., more medical manpower will be necessary per unit of population.

## **7. SCIENCE AND ECONOMY OF MANPOWER**

The elimination of some diseases, e.g. poliomyelitis, and the introduction of computer and other labour-saving techniques, will be important but will not compensate for the expansion of medical science and the resultant increase in demands upon health manpower of all categories.

## **8. INCREASED AND INCREASING DEMANDS FOR TEACHERS, ADMINISTRATORS, AND RESEARCH WORKERS IN THE HEALTH SCIENCES**

## **9. THE "SYSTEM" OF DELIVERING HEALTH SERVICES**

*"The health service or system of health care should develop the capability of delivering comprehensive health care for people, the community, rather than merely providing episodic treatment for patients.*

*"Physicians exercise primary authority over how health care resources are used: comprehensive, integrated systems in which they will participate with economic responsibility hold most promise. But by whatever means, it is important that physicians and hospitals join in developing economically self-sufficient modes of functioning . . ."* (Mr. Scott Fleming, Kaiser Foundation Health Plan, Oakland, Calif.)

*The Manpower Committee is convinced of the merit of that part of the Kaiser Health Plan which establishes not only participation by physicians in a comprehensive integrated health system, which includes hospitals, with economic responsibility, but also economic incentives and economic rewards based on increased efficiency of*

*hospital utilization and operation. Reducing demands for health manpower without affecting quality, will be one major benefit.*

## **10. GROUP PRACTICE AND MEDICAL OR “HEALTH” TEAM**

Development of group practice and the health team approach under the leadership and supervision of the physician is an inescapable component of the future evolution of any integrated system of delivering health services.

## **11. DENTAL TEAM**

Closely allied to the team under the physician's leadership should be a team under the dentist's leadership.

## **12. COMMUNITY HEALTH CENTRES**

Facilities housing a medical and dental team, or a larger group, will be developed to serve a community and will in turn be related to a hospital system.

## **13. DOCTORS AND DENTISTS AND OTHER HEALTH PROFESSIONALS AND AUXILIARY PERSONNEL**

There will be proportionately a larger increase in other health professions and auxiliary personnel than in doctors and dentists.

## **14. HOSPITAL SYSTEM**

Conservation of manpower, even if it is the only reason, requires vertical and horizontal integration of regional hospital systems and elimination of unplanned creation and duplication of resources. The complex expensive facilities essential to modern medical science must be related to genuine need.

## **15. TRANSPORTATION OF PATIENTS AND URBANIZATION OF THE POPULATION OF ONTARIO**

Increasingly, medical experience has established, particularly in military situations, that in almost all cases it is best to transport the patient requiring hospitalization to the centre with the appropriate personnel and resources. The helicopter and all-weather super-highways and the increasing urbanization of Ontario's population support the further centralization of health care facilities designed to

deliver first quality patient care and to achieve economy of manpower and equipment.

Evaluation of the actual health needs of each part of the province requires that they be translated into specific types of medical services—translated into specific types of physician hours for specific types of physicians—translated in turn into physician bodies at so many hours per week. The Canadian Sickness Survey of 1951, carried out under the direction of the present General Secretary of the Canadian Medical Association, Dr. A. F. W. Peart, was the first and only major attempt at evaluating sickness levels in the Canadian population at large—but it did not take the important further step of translating the various types of sickness found into the specific services required to deal with them at the time found. This probably would have been a very difficult task in the context of the shifting sands of ever-changing and experimenting medical technology, and the changing patterns for the delivery of that technology (without losing that element which is an art) in terms of interpersonal relationships. Because, at the present time, we cannot evaluate all the factors both mentioned and implied above, we must resort to the most simple usable technique, the physician-population ratio, which reflects all these things in its imperfect way.

## 16. THE “RIGHT” FUTURE PHYSICIAN-POPULATION RATIO

Vigorous differences of opinion regularly arise in any group or committee concerning the “right” physician-population ratio to be established as an objective for future attainment. The difficulty is illustrated by the following figures in the U.S.A. (Health Manpower Perspective 1967—H.E.W.) (Table I on page 36).

In Canada the physician-population ratios, province by province, were recorded by the Royal Commission on Health Services (1964), Table 7-2, as follows in part (Table II on page 37).

### Prepayment Group Practice Plans, U.S.A.

In the U.S.A., prepayment group practice plans (H.E.W.—Health Manpower Perspective 1967) provide service with average staffing ratios of 109.4 doctors per 100,000 population, or a ratio of 1/914. This figure *excludes interns, residents, and the staff of institutions providing long term care* such as long-stay and mental hospitals.

For the general population of Ontario, excluding interns and

residents and recognizing that the prepayment group practices (NOVA) in the U.S.A. do not always include the over-65 group, this committee, for purposes of an immediate starting point, judged a satisfactory physician-population ratio to be a *practising doctor-population ratio of about 1/900*.

### Ratio of Practising Doctors to Total Medical Population

Based on the Canadian Medical Association Manpower Survey and United States studies, a not unreasonable estimate is that less than 75 per cent of all doctors are actively engaged in practice. Increasing numbers of doctors are engaged in teaching, research and administration and this trend will continue.

### Medical Assistants

#### *Duke Doctors' Assistants (Darley, W. and Somers, Anne R.)*

“The best known programme to train medical assistants is that at Duke University, which is set up, primarily, to attract ex-corpsmen. This is a two-year programme, culminating in certification by the University, in two phases. The first orients the students to the nature of biologic systems, the relations between structure and function and the effects of disease. The second related the first to an on-the-job-working-with-physician-and-nurses experience in patient care, related research and clinical diagnosis and therapy. The intent is to train a person who can function at a level between the physician and the nurse, being of assistance to both. The probability that graduates of this programme will receive additional on-the-job training so that they can fit into special or specialty situations is recognized. In 1965, 10 students were in training, and for the class of 1966 there were over 500 applications.”

The removal of a work-load from the physician which can be equally or better carried out by others is an essential step. It will enable the doctor to see and treat more patients to better advantage, and will permit the doctor to utilize his unique knowledge and skills more fully than under the existing system.

The nurse has long been in fact the doctor's assistant in caring for patients in hospital, in ambulatory patient clinics and in some physicians' private offices. Victorian Order Nurses and Public Health Nurses serve in varying degrees as doctors' assistants. In northern Canada, district nurses are obliged to serve as midwives and take on

responsibilities ordinarily reserved for physicians in less isolated areas. At Grenfell Missions and Newfoundland Outports, Outpost Nurses, specially trained at Dalhousie, are well equipped as nurses, public health nurses, midwives, and with some training in treating surgical lacerations, etc.

Nurses trained as midwives need no job description.

The Manpower Committee has concluded that doctors' assistants will include the Duke Assistant, the Public Health Nurse, the Registered Nurse, the Midwife, the Ophthalmic Technician, the Surgical Technician, and probably a number of others.

To work in the hospital emergency, assist with surgical operations, deliver women of children, assist ophthalmologists with orthoptics, glaucoma and refractions, assist in operation of a renal dialysis unit—these are situations where doctors' assistants could be of great value. Clearly a diversity of training and specialized on-the-job training are necessary. Legal recognition of medical assistants will be necessary.

### **Physician Population in Ontario**

As an introduction to the medical manpower situation in Ontario, it is well to consider the historical record of physician supply in this province. This is shown in Table III on page 38.

It will be noted that *the physician-population ratio reached its most favourable point in this province in 1961, with a ratio of one doctor to every 774 persons*, and that we have tended gradually to lose ground since that time, reaching a ratio of 1/795 at the end of December, 1967. This may well be due in part to the rising tide of Canadian immigration since 1961, more than half of which settled in Ontario. A forecast levelling off of population increases during the next decade, however, combined with rising output from our medical schools and other sources, should enable us to achieve again a more favourable ratio.

### **Ratios in Other Countries**

A brief look at physician-population ratios in some other leading countries gives us some idea of our comparative position in Ontario.

Table IV indicates that our position is more favourable than the

U.K., France, and Sweden, but not as good as Denmark, Australia, the U.S.A., New Zealand, and West Germany.

## Population Projections

During the past week\* we have received two new population projections for Ontario from the Economic Analysis Branch of the Treasury. These two projections provide a "median" and a "high" projection for the years 1967 to 1991. Both projections are based on a "net" immigration into Ontario of 30,000 per year, projected at a constant level. The major difference between the two comes in the fertility rates applied to the "native" sector. The "median" projection assumes falling rates until 1971 and then the maintenance of the 1971 rate until the end of the projection period. The "high" projection on the other hand assumes a gradually rising fertility rate for all age groups except 45-47, until the year 1991. The result of the two different assumptions produce populations as follows:

Year	Median Projection	High Projection
1971	7,457,000	7,531,000
1976	7,927,000	8,208,000
1981	8,463,000	9,004,000
1986	9,033,000	9,890,000
1991	9,580,000	10,818,000

Due to the fact that it takes almost a decade between the initial planning and the initial output of new medical and dental schools, we have deemed it advisable not to underestimate the population for which we will have to provide. Even the "high" projections indicated above do not seem unduly high in the light of past experience. For this reason, therefore, we have chosen to test our own planned and projected medical and dental school programmes against the higher of these two projections.

## Source of New Medical Manpower in Ontario since 1960

In addition to graduates of Ontario Medical Schools, there has been a considerable influx of "declared" doctors to Canada in recent years and this number has been rising—reaching almost 1,000 in 1966. Not all of the declared doctors succeed in being licensed to practice—because of inability to meet the professional standards of the Ontario College of Physicians and Surgeons. *In 1967, however,*

\* June, 1968

172 doctors from outside Canada were licensed to practice in Ontario, or 30 per cent of the total new licensees in that year. Table V shows the sources of medical immigration to Canada during the past six years.

*In addition to doctors from outside Canada, Ontario receives a considerable influx of licensees from other provinces, rising from 63 in 1964—when this factor was first derived from the records—to 108 in 1967, or 19 per cent of our new registrants in that year. Between them, therefore, registrants from outside Canada and from other provinces formed 49 per cent—or almost half of all new registrants in this province in 1967.*

### Attrition in the Ontario Medical Profession

Considering all sources of addition to the medical work force in Ontario as against the apparent losses, we are able to determine the degree of attrition which we are experiencing. It is not possible to pinpoint all sources of loss, since many doctors leave the province for study, travel or research without themselves knowing whether they intend to return, and without being required to notify anyone. They merely show up "next year" as a non-registrant. If they maintain their registration while out of the province, they are classified as non-resident and removed from the hard core figures of active, resident physicians which we use for calculation of our attrition ratios.

Table VI shows that attrition during the nineteen sixties has varied between 1.3 and 4.6 per cent with an average of about 2.85 per cent. Since the average during the past five years has been about 3.1 per cent, however, we have decided to take a rounded estimate of 3.0 per cent for our future projections.

### Consideration of Future Requirements from Ontario Medical Schools

Table III showed that the present gross physician-population ratio for Ontario was 1/795 as of December 31, 1967. In order to project future requirements and translate them into medical school output, we would normally take whatever ratio is desired—constant or improving—and divide it into the projected population. We could then see what is required in the way of medical school output. Under current circumstances however, a large medical school expansion programme is already underway—or preordained—and so it is our

intention to apply this already preordained output to our population projections to see the effect it may have on the doctor-population ratio by the time it reaches its full development. We will then be able to see whether any further increase in output is required or whether the *status quo* should be maintained within the forecast period.

### Expansion Programmes Already Planned for Ontario Medical Schools

Table VII shows the projected expansion in graduate output already planned for Ontario Medical Schools.

This demonstrates that increased output already planned for Ontario Medical Schools should result in an increase in graduates from the level of 290 in the year just completed to a level of almost 550 in 1975-76. It becomes essential to find out how this increase will alter physician-population ratios using the projected levels of population that have just been issued by the Department of Treasury and Economics.

### The Effect of Planned Expansion of Ontario Medical Schools

**Doctor Population Ratios:** If we take the planned medical school expansion indicated in Table VII and add to it a *planned or arbitrary allowance for immigration from all sources outside Ontario*, deduct the numbers that must be used to make up attrition at a rate of 3 per cent which includes immigration, and to keep up with the increase in population, we are left with a residual group of new graduates who can be used to improve the doctor-population ratio. By adding these to the total doctor work force at the beginning of the period and comparing the result to the projected population 12 months later, we can see the effect it has had on the doctor-population ratio. This is done in Table VIII, carrying the process up to the full development of current programmes in 1975-76.

Table VIII shows that, with the planned Medical School output in the left hand column plus an allowance for immigration, etc., of 140 per year, the doctor-population ratio will improve from 1/795 persons in December 1967 to 1/786 in June 1968 and continue in this way until it reaches 1/713 in June 1976. The allowance of 140 for immigration is made up of a minimum of 65 from "other countries." Attrition is applied at the rate of 3 per cent per annum and an allowance is made for annual population increase at the ratio prevailing in June 1967.

A significant aspect of this table is the size of the "Residual for Ratio Improvement" shown in the fourth column from the right. This increases from 71 in 1967-68 to 171 in 1975-76—indicating that there is still much potential for improving the Ontario ratio after 1975-76 without any further additions to the medical school graduation programme. Once these facilities have been developed, and a certain level of output reached, graduates will continue to emerge at the previously attained rates. For this reason we will assume, in Table IX, that the attained level of output will be maintained each year up to 1991—without any further increases—in order to determine the effect on the ratio.

Table IX shows that presently planned medical school output, if continued without further increase, will reduce the doctor-population ratio in Ontario to 1/680 by June 1985—given the population levels that have been assumed and an annual inflow of 140 doctors from beyond Ontario. There is also sufficient remaining "impetus" to the programme to keep the ratio well below 1/700 up to 1991 and beyond.

### The Effect of Less Reliance on Doctors From Other Provinces.

The tables in the foregoing section of this Report have been based on an immigration allowance of 140 per year made up of the minimum numbers which we have received from "English Speaking Countries," "Other Countries" and "Other Provinces." In the further projection which follows, we wish to make the assumption that we will not count on any supply of doctors from the other provinces in Canada, since we feel that they need all that they themselves can train and, with Medicare, doctors will have an excellent professional and economic opportunity in all provinces. Those that gravitate to Ontario probably now do so in many instances because of a higher standard of living—on the average—in this province. *We do not judge it to be to our own advantage to be dependent upon other countries and other provinces for 49 per cent of our new medical registrants.* As well, we are depleting the provinces of origin of doctors. For this reason, in the following projection, we have arbitrarily assumed a flat gain of 50 doctors from "English Speaking Countries" and 50 from "Other Countries," but no doctors from "Other Provinces." The projection is broken into two parts—Table X, showing what happens under current building programmes up to 1978, and Table XI, showing the additional output required to achieve a ratio of 1/680 by the year 1986.

Table X shows that even under the assumption of "no inflow" of doctors from other provinces, the current medical school building programme, which reaches its full output of 550 doctors per year in 1975-76, still carries enough momentum to continue to reduce the doctor-population ratio at five or more persons per year (the rate of improvement needed to reach 1/680 by 1986) until the year 1978-79. In 1978-79, the rate of improvement in the doctor-population ratio falls below five per year and, therefore, a new programme of construction must be envisaged if we are to reach the level of 1/680 by 1986. The levels of total output of new doctors required up to 1986 in order to reach this objective are shown in Table XI.

The first column of Table XI shows the improvement in the doctor-population ratio needed to reach 1/680 by 1985-86. At this point, medical school output in the far right hand column needs to reach 719 per annum—or the rounded figure of 720. Once a level of output of 720 per annum is reached, it will result in a continuing improvement in the ratio which will reach a level of 1/662 by 1990-91 even though medical school output is kept constant at 720.

### Implications with Reference to New Medical School Construction

While the Table XI shows the total output of new doctors required each year in order to attain the objective, this output in terms of increases over the present programme is shown in Table XII.

This table shows that, under the assumed circumstances of only 100 additional doctors from out of province sources, *Ontario will have to build new facilities to turn out an additional 170 new doctors per annum, and have them turning out new graduates at sometime in the early eighties. The increase of 170 can of course be broken into two schools or as required. The number of student places required will be four times the graduating class plus an allowance for "in course" attrition.*

Two main sets of projections have been offered in this report. The first projection assumes an immigration level of 140 per annum from other provinces and other countries and shows that on this basis we can reach a gross doctor-population ratio of 1/680 by 1985-86 (equivalent to a "net" ratio of 1/900 as postulated in Recommendation 5) without the construction of any new facilities. The second projection assumes an "out of Province" inflow of doctors of only 100 per annum (40 less than the previous projection)

and shows that on this basis we will require new facilities to graduate 170 new doctors per annum by the early 1980's. Actual immigration from all sources was 280 in 1967, up from 213 in 1966 and 156 in 1965—but should we depend on these other countries and other provinces?

TABLE I  
U.S.A. — ACTIVE HEALTH PERSONNEL PER 100,000 POPULATION

Geographic Division	M.D. (1965)	Ratio	Dentists (1965)	Ratio	Nurses (R.N. 1962)	Ratio
U.S.A.	—	1/680	45	1/222	298	1/336
New England	168	1/595	53	1/1887	470	1/213
Middle Atlantic	171	1/585	58	1/1724	376	1/266
South Atlantic	116	1/862	32	1/3125	255	1/392
East South Central	89*	1/1124	31	1/3225	165	1/606
West South Central	101	1/990	31	1/3225	171	1/585
East North Central	120	1/833	45	1/2222	286	1/350
West North Central	114	1/877	47	1/2128	301	1/332
Mountain	115	1/870	43	1/2326	307	1/326
Pacific	157	1/636	53	1/1887	329	1/304

\* Highest infant mortality rate in the U.S.A.

TABLE II  
TOTAL PRACTISING AND NON-PRACTISING DOCTORS

Province	1941	1951	1961	1965*
Newfoundland	—	—	1,500	1,590
Prince Edward Island	1,418	1,324	1,149	1,200
Nova Scotia	1,350	1,094	1,044	843
New Brunswick	1,693	1,445	1,314	1,181
Quebec	1,054	990	853	790
Ontario	903	857	776	792
Manitoba	1,108	926	823	822
Saskatchewan	1,700	1,278	973	963
Alberta	1,320	1,118	982	927
British Columbia	1,010	847	758	750

\* Canadian Medical Association

TABLE III  
THE GROSS PHYSICIAN-POPULATION RATIO IN ONTARIO  
(Census - June, 1911-51; Dec. 31, 1961-67)

Year	No. of Doctors (June)	Population (June)	Gross Ratio
1911	—	2,934,000	1/828
1921	3459	3,432,000	1/848
1931	3934	3,788,000	1/872
1941	4195	4,598,000	1/903
1951	5365	(December)	1/857
1961	8136	6,298,000	1/774
1962	8236	6,427,000	1/780
1963	8478	6,568,000	1/775
1964	8638	6,723,000	1/778
1965	8702	6,888,000	1/792
1966	8932	7,078,000	1/792
1967	9110	7,240,000	1/795

TABLE IV  
PHYSICIAN-POPULATION RATIOS IN OTHER COUNTRIES

Country	Year	Ratio
West Germany	1964	1/650
New Zealand	1964	1/670
U.S.A.	1964	1/680
Australia	1964	1/740
Denmark	1964	1/750
Ontario	1964	1/795
United Kingdom	1964	1/830
France	1964	1/840
Sweden	1965	1/910

Source: W.H.O. Statistics for 1963- (1967)

TABLE V

IMMIGRANTS WHOSE DECLARED PROFESSION WAS THAT OF DOCTOR,  
BY COUNTRY OF LAST PERMANENT RESIDENCE, 1961-1965

Country of Last Permanent Residence	1961	1962	1963	1964	1965	1966
Austria	—	1	2	7	4	11
Britain	143	130	220	243	281	355
China	22	7	6	12	14	49
France	7	12	10	7	14	15
Germany	12	8	13	12	7	7
Hong Kong	NA	12	12	23	30	NA
Hungary	4	—	1	—	—	1
India	—	23	26	21	37	57
Israel	18	5	4	11	3	10
Italy	18	8	6	10	5	7
Netherlands	6	1	2	8	1	5
Poland	7	4	3	2	2	6
Spain	24	13	16	21	32	17
Turkey	23	28	28	29	21	9
U.S.A.	67	97	143	60	42	58
West Indies	NA	9	13	35	39	43
Other	94	172	182	167	260	345
<b>Totals</b>	<b>445</b>	<b>530</b>	<b>687</b>	<b>668</b>	<b>792</b>	<b>995</b>

Source: Immigration Statistics - Department of Citizenship and Immigration

TABLE VI  
ATTRITION IN THE ONTARIO MEDICAL PROFESSION

Year of Yr.	Drs. Start	Additions During the Year				Theo- retical Total	Actual at End Yr.	Loss at in Yr.	Average Drs. in Yr.	Per Cent Attrition
		Ont. Grads	Adds. during Year	UK USA	Other A&NZ, Provs.					
1960	7,608		266	64		71	8,009	7,908	101	1.29
1961	7,908		291	58		55	8,312	8,136	176	8,022
1962	8,136		293	54		47	8,530	8,236	294	8,186
1963	8,236		300	57		28	8,621	8,478	143	8,357
1964	8,478		272	63		25	8,890	8,638	252	8,558
1965	8,638	229	79	52		27	9,023	8,702	321	8,670
1966	8,702	227	93	94		26	9,142	8,932	210	8,817
1967	8,932	285	108	139		33	9,528*	9,110	418	9,021
										Average 2.85

\* Includes 31 reregistrants

TABLE VII

School	66-67	67-68	68-69	69-70	70-71	71-72	72-73	73-74	74-75	75-76
Toronto	132	179	166	164	169	169	227	227	227	227
McMaster	—	—	—	—	—	—	16	26	48	64
London	59	55	74	76	77	75	100	100	100	100
Kingston	47	60	60	66	66	66	68	68	72	75
Ottawa	52	66	66	66	66	66	84	84	84	84
<b>Total</b>	<b>290</b>	<b>360</b>	<b>366</b>	<b>372</b>	<b>378</b>	<b>376</b>	<b>495</b>	<b>505</b>	<b>531</b>	<b>550</b>

TABLE VIII  
THE EFFECT OF PLANNED OUTPUT, IMMIGRATION AND ATTRITION ON  
DOCTOR-POPULATION RATIOS

Academic Year	Sources of New Medical Manpower					To maintain Status Quo			Doctor- Population Ratio		
	Planned Medical School Output	Immi- grants & Other Prov.	Total Infusion	Population Increase	To keep up with Popl. Inc.	To make up for Attrition 3%	Total Doctors	Doctors After Graduation	Projected Population	Population Ratio	
1967-68	360	140	500	125,800	158	271	71	9,250	7,275,000	1/786	
1968-69	366	140	506	88,000	107	278	121	9,478	7,360,000	1/777	
1969-70	372	140	512	85,000	107	284	121	9,706	7,445,000	1/767	
1970-71	378	140	518	86,000	108	291	119	9,933	7,531,000	1/758	
1971-72	378	140	518	126,000	154	298	61	10,153	7,657,000	1/754	
1972-73	495	140	635	130,000	164	305	166	10,483	7,787,000	1/743	
1973-74	505	140	645	135,000	170	314	161	10,814	7,922,000	1/733	
1974-75	530	140	670	140,000	177	324	169	11,160	8,062,000	1/722	
1975-76	550	140	690	146,000	184	335	171	11,515	8,208,000	1/713	

TABLE IX

THE EFFECT OF PLANNED OUTPUT, IMMIGRATION AND ATTRITION ON  
DOCTOR-POPULATION RATIOS  
(1976-77 to 1990-91)

Academic Year	Sources of New Medical Manpower				To maintain Status Quo				Projected Population			
	Planned Medical School Output	Immi- grants	Total Infu- sion	Population Increase	To keep up with Popl. Inc.	To make up for Attrition	Resi- dual for Ratio	Total Doctors After Graduation	Doctor- Population Ratio			
1976-77	550	140	690	149,000	188	345	157	11,860	8,357,000	1/704		
1977-78	550	140	690	155,000	195	356	139	12,194	8,512,000	1/698		
1978-79	550	140	690	159,000	201	366	123	12,518	8,671,000	1/693		
1979-80	550	140	690	164,000	207	376	107	12,832	8,835,000	1/689		
1980-81	550	140	690	169,000	213	385	92	13,137	9,004,000	1/685		
1981-82	550	140	690	171,000	218	394	80	13,433	9,175,000	1/683		
1982-83	550	140	690	175,000	221	403	66	13,720	9,350,000	1/681		
1983-84	550	140	690	177,000	223	412	55	13,998	9,527,000	1/681		
1984-85	550	140	690	180,000	227	420	43	14,268	9,707,000	1/680		
1985-86	550	140	690	182,000	230	428	32	14,530	9,889,000	1/681		
1986-87	550	140	690	182,000	230	436	24	14,784	10,072,000	1/681		
1987-88	550	140	690	184,000	232	444	14	15,030	10,256,000	1/682		
1988-89	550	140	690	186,000	235	451	4	15,269	10,442,000	1/684		
1989-90	550	140	690	187,000	236	458	-(4)	15,501	10,629,000	1/686		
1990-91	550	140	690	189,000	238	465	-(13)	15,726	10,818,000	1/688		

TABLE X

THE EFFECT OF THE CURRENT BUILDING PROGRAMME ON  
 THE DOCTOR-POPULATION RATIO, ASSUMING NO DOCTOR  
 INFLOW FROM THE OTHER PROVINCES (PERIOD 1967-79)  
 (and 100 per Annum from Other Countries)

Academic Year	Sources of New Medical Manpower			To maintain Status Quo			To keep up with Popl. Inc.			Total Doctors			Projected Population			Doctor- Population Ratio	
	Planned Medical School Output	Immigrant grants	Total Infusion	Population Increase	To make up for Attrition	Residual for Improvement	Attrition 3%	Total Doctors	After Graduation	Projected Population	Population	Projected Population	Population	Projected Population	Population	Projected Population	Population
1967-68	360	100	460	125,000	158	271	31	9,210	7,275,000	1/790							
1968-69	366	100	466	85,000	107	276	83	9,400	7,360,000	1/783							
1969-70	372	100	472	85,000	107	282	83	9,590	7,445,000	1/776							
1970-71	378	100	478	86,000	108	288	82	9,780	7,531,000	1/770							
1971-72	378	100	478	126,000	159	293	26	9,965	7,657,000	1/768							
1972-73	495	100	595	130,000	164	299	132	10,261	7,787,000	1/759							
1973-74	505	100	605	135,000	170	308	127	10,558	7,922,000	1/750							
1974-75	530	100	630	140,000	177	317	136	10,871	8,062,000	1/742							
1975-76	550	100	650	146,000	184	326	140	11,195	8,208,000	1/733							
1976-77	550	100	650	149,000	188	336	126	11,509	8,347,000	1/725							
1977-78	550	100	650	155,000	195	345	110	11,814	8,512,000	1/721							
1978-79	550	100	650	159,000	201	354	95	12,110	8,671,000	1/716							

TABLE XI

PROJECTED ANNUAL REQUIREMENTS FOR MEDICAL SCHOOL OUTPUT  
IN ORDER TO IMPROVE RATIO TO 1/680 BY 1985-86

Ratio Required	Projected Population	Doctors Required	Annual Increase Required for:			Total Annual Requirement	Ratio Improvement 3%	Attri- tion 3%	From Outside Sources	Required Medical School Output
			Pop. Inc.	Annual Requirement	From Medical School Output					
1979-80	1/711	8,835,000	12,426	207	363	109	679	100	579	
1980-81	1/706	9,004,000	12,754	213	373	115	701	100	601	
1981-82	1/701	9,175,000	13,088	216	383	118	717	100	617	
1982-83	1/696	9,350,000	13,434	221	393	125	739	100	639	
1983-84	1/691	9,527,000	13,787	223	403	130	756	100	656	
1984-85	1/686	9,707,000	14,150	227	414	136	777	100	677	
1985-86	1/680	9,890,000	14,544	230	425	144	819	100	719	
1986-87	<u>1/675</u>	<u>10,072,000</u>	<u>14,928</u>	<u>231</u>	<u>436</u>	<u>153</u>	<u>820</u>	<u>100</u>	<u>720</u>	
1987-88	1/670	10,256,000	15,300	232	448	140	820	100	720	
1988-89	1/667	10,442,000	15,661	235	459	126	820	100	720	
1989-90	1/664	10,629,000	16,011	236	470	114	820	100	720	
1990-91	1/662	10,818,000	16,351	238	480	102	820	100	720	

TABLE XII  
POTENTIAL INCREASE IN MEDICAL SCHOOL OUTPUT

YEAR	Required Medical School Output	Annual Increase into No. of Grads	Grouping Into Schools	Student Places Required
1978-79	550	29		
1979-80	579	22		
1980-81	601	16		
1981-82	617	22		
1982-83	639			
				360+
1983-84	656	17		
1984-85	677	21		
1985-86	720	43		
				325+
1986-87	720			
1987-88	720			
1988-89	720			
1989-90	720			
1990-91	720			
				<u><u>170</u></u>



## *Section II*

### **DENTAL MANPOWER**



## SECTION II

### *Dental Manpower*

#### Introduction

The Report on Dental Manpower was also presented to Council in June 1968. The report as presented at that time forms Appendix A of this section. It is preceded by the Conclusions and Recommendations derived from the report, which attempt to summarize in capsule form the thinking which led up to each recommendation and also the general philosophy of the whole report.

#### Conclusions and Recommendations

In the field of dentistry, the Manpower Committee concludes that the general increase in the level of education, higher standards of living, and labour union policies, together comprise potent forces which the Committee believe could lead to substantially increased demand for dental services. The increasing scope and service of dentistry would be made possible by science and would be balanced approximately by the increasing professional productivity of the dentist with auxiliary personnel working under his supervision.

The Committee feels that the exact mix of dental and auxiliary dental manpower for Ontario must be gradually evolved. Auxiliary dental personnel must relieve dentists of many tasks so dentists may apply fully their knowledge and skills to solve problems which only they are qualified to undertake. The Committee feels that water fluoridation and the topical application of fluorides should be extended. Dental programmes for school children and the social assistance group would bear heavily upon manpower needs.

The Committee concludes that educational facilities for the training of dental auxiliaries should be distributed throughout Ontario in order to encourage the employment of these personnel in all parts of the province. Suitable agencies for the training of such personnel would be the Community Colleges of Applied Arts and Technology provided that suitable clinical resources are available in each location. A plan should be considered to encourage competent practitioners as teachers in these colleges.

A serious problem also exists in the provision of academic manpower in university dental faculties. The Committee feels that it is, therefore, important that dental faculties should be given every encouragement to expand their graduate and research programmes because these are the sources of future faculty members without which the whole programme for increased provision of dental services can not be carried out.

## I. DEVELOPMENT OF DENTAL SERVICES

### Comment

The Committee was of the opinion that, in order to develop dental services in the province on a more fully rounded basis, a greater organization within the Department of Health would have to be undertaken. At the same time, it was realized that the extension of dental services was to a very great extent a financial or "insurance" problem. Dentistry today is still an "elective" or optional service from the point of view of many persons. Rightly or wrongly, it does not press upon the individual in quite the same way as do medical problems—and it is perhaps for this reason that insurance for dentistry has lagged behind insurance for medical services. In proposing any extension of the facilities for dental service, therefore, one has to keep in mind that they will not automatically be "consumed" by the public unless the money to pay for the services is also provided, either directly or through insurance mechanisms—and the public either may or may not want to pay for the insurance mechanisms. For this reason, it appears necessary to proceed cautiously in this area, on a step by step basis. Nevertheless, the provision of a more extensive facility within the Department of Health itself would appear to be an important first step. The recommendation reflecting this point of view is as follows:

## Development of Dental Services

### *RECOMMENDATION 14*

*THAT the Province expand its resources regarding health to include substantive dental health services within the Department of Health, with the Department having the responsibility placed upon it for the development of resources for the dental health and dental care of the residents of Ontario.*

## II. THE TRAINING OF DENTAL PERSONNEL

### Comment

The Committee was of the opinion that there are other ways of approaching the increased provision of dental services than by the simple expansion of the number of dentists. The development of various kinds of auxiliary dental personnel, it was felt, could do much to increase the productivity of the individual dentist. Specific roles could be developed for auxiliary personnel which would enable them to perform much of the more routine yet important work which would otherwise consume the valuable time of the more highly trained dentist. Recommendations concerning the production of dental personnel are as follows:

### Dentists

### *RECOMMENDATION 15\**

*THAT resources to graduate an additional 25 dentists, annually, should be productive by 1973. By 1978, facilities to train a further 125 dentists annually should be developed.*

### Dental Associates

### *RECOMMENDATION 16*

*THAT by 1972, courses should be established to synchronize, with the development of a school dental health programme, the graduation of as many dental associates as possible, up to 125 per year.*

\* See NOTE following Recommendation 31 concerning Recommendations 15 to 31.

## Therapists

### *RECOMMENDATION 17*

*THAT therapists (upgraded hygienists) should be trained in a minimum ratio of 2:1 with graduating dentists, for ten years, providing for revision of numbers as demand is established for this type of auxiliary.*

### *RECOMMENDATION 18*

*THAT the Province devise some form of financial arrangement to encourage private practitioners of dentistry to employ dental therapists.*

### *RECOMMENDATION 19*

*THAT conferences be held with the dental profession:*

- a. to obtain their co-operation in the training of dental associates for employment only in a school dental health service and under proper and effective supervision by dentists;*
- b. to obtain their co-operation in the training of therapists (upgraded hygienists).*

## III. LOCATION OF TRAINING ESTABLISHMENTS FOR DENTAL AUXILIARIES

### Comment

The Committee was of the opinion that if dental auxiliaries are trained in more widely spaced training facilities, then their pattern of utilization will also be more widely spread over the province. The most apparent medium for achieving this wider dispersal of training is the Colleges of Applied Arts and Technology—provided that the clinical and instructional skill is available in associated institutions in the same community. The recommendations with respect to training facilities are as follows:

## Therapists

### *RECOMMENDATION 20*

*THAT the Education Committee give consideration*

*to training therapists in the colleges of applied arts and technology distributed throughout Ontario, where suitable clinical facilities can be made available. It would be desirable if first priority could go to those colleges situated close to dental schools, secondly to those colleges close to health sciences centres without a dental school and finally to those colleges close to a university with a department of biology and a nearby hospital with a dental department.*

### **Dental Associates**

#### *RECOMMENDATION 21*

*THAT the Education Committee give consideration to the feasibility of establishing courses to train dental associates in the colleges of applied arts and technology throughout Ontario.*

### **Dental Assistants**

#### *RECOMMENDATION 22*

*THAT the Education Committee give consideration to the view that more high schools throughout the province should develop formal courses for dental assistants.*

## **IV. THE NEED FOR TEACHERS FOR AUXILIARY PERSONNEL**

### **Comment**

A major problem in the development of sufficient auxiliary dental personnel is the provision of teachers to instruct them. As an approach to this problem, the Committee recommends:

#### *RECOMMENDATION 23*

*THAT the Education Committee should be asked to consider and develop a plan supporting the development of competent practitioners as teachers in colleges of applied arts and technology for dental therapists and associates.*

## V. THE SOCIAL ASSISTANCE GROUP

### Comment

As an initial step in broadening the scope of dental services in Ontario, the Committee felt that the position of the Social Assistance Group might well be considered. It recommends:

#### *RECOMMENDATION 24*

*THAT, in respect to social assistance groups, the possibility of the Province assisting these groups in obtaining dental care be explored further.*

## VI. WATER FLUORIDATION

### Comment

Another method of improving the dental condition of a large segment of the population, using the preventive approach, is by the fluoridation of the water supplies and by the topical application of fluorides for school children in unfluoridated areas. The Committee states:

#### *RECOMMENDATION 25*

*THAT, in order to lower dental manpower requirements for the care of children:*

- a. the Province explore and, if possible, follow the precedents set by Ireland and certain States in the United States in making water fluoridation mandatory for all municipalities with non-fluoridated central water supplies, as recommended in Minute 49.4 Ontario Council of Health meeting, June 15-16, 1967.*
- b. dental assistants should be trained to carry out, under proper supervision, topical application of fluorides for school children who live in areas without fluoridated water supplies, as a responsibility of the school dental health service.*

## VII. EXISTING LEGISLATION – DENTAL HYGIENISTS

### Comment

The Committee felt that present legislation restricting the profession of “Dental Hygienist” to females was an anomaly which should be corrected. Predominantly female professions tend to experience a higher rate of attrition. The following recommendations would tend to moderate that situation amongst hygienists.

#### *RECOMMENDATION 26*

*THAT existing legislation whereby only females may become dental hygienists should be amended.*

#### *RECOMMENDATION 27*

*THAT the legal control of hygienists should not be vested in the Royal College of Dental Surgeons of Ontario. (“If some form of regulation is required, then we think that these are clearly cases for provincial licensing boards.”—Report No. 1, Volume 3, Royal Commission Inquiry into Civil Rights.)*

## VIII. EXISTING LEGISLATION – SPECIALISTS

### Comment

A further unnecessarily restrictive piece of legislation which the Committee feels should be amended concerns the restriction of specialists to their specialty—which could easily hinder the flexibility of dental services in some areas. The recommendation is as follows:

#### *RECOMMENDATION 28*

*THAT existing legislation restricting the practice of specialists to their specialty should be amended.*

## IX. CONTINUING OPERATIONAL RESEARCH AND EVALUATION

### Comment

The Committee is concerned that operational research and evaluation of all proposed programmes be given an important place in the planning of these undertakings. It is recommended:

#### *RECOMMENDATION 29*

*THAT provision be ensured for on-going operational research and evaluation of the proposed school dental service, and dental service for the social assistance group, with special relation to utilization of dentists and dental associates, and the quality of dental care.*

## X. ACADEMIC MANPOWER: UNIVERSITY FACULTY TEACHING AND RESEARCH

### Comment

The Committee feels that:

- Because the education of dentists is dependent upon dental faculty members;
- Because teachers are in very short supply;
- Because the supply of teachers, teaching, and research are a troika;

it is essential to make the following recommendation:

#### *RECOMMENDATION 30*

*THAT faculties of dentistry be given every encouragement, and the financial means, to enlarge the full-time faculty, to expand research resources, to increase the number of graduate students and research scholars who will be the future faculty members.*

Only by these measures will the severe shortage of teaching manpower be relieved.

## XI. SCHOOL DENTAL HEALTH PROGRAMMES

### Comment

The Committee feels that the best method of making an attack on the dental health problem is through children. By beginning proper dental care at an early age it is felt that the population will gradually be educated to the benefits of proper dental care and that dental problems present in adults can to a great extent be prevented from occurring in the growing generation. The recommendation is:

#### *RECOMMENDATION 31*

*THAT, in respect to a school dental health programme:*

- a. a programme be developed in Ontario to provide an alternative and optional service to existing resources;*
- b. this programme be operated under the supervision of dentists, and be staffed by dental associates, employed by the Province of Ontario;*
- c. the programme start at a time to be co-ordinated with the body of the report on Dental Manpower;*
- d. in order to ensure initial staffing, an experimental course for the training of dental associates be started immediately.*

### NOTE:

Council discussed Recommendations 15-31 (Dental Manpower) and accepted the basic philosophy of these recommendations which are directed to modified methods of delivering dental care and the development of resources for these purposes. Council accepted the need for demonstration projects and urged action in this regard.

Subsequently, a Sub-committee on Dental Care Services was established under the Committee on Health Care Delivery Systems to study all aspects of dental care and develop appropriate demonstration projects. These areas are under active consideration by the Sub-committee.



*Appendix A*  
**BACKGROUND PAPER ON**  
**DENTAL MANPOWER**



## APPENDIX A

### ***Background Paper on Physician Manpower***

Evidence presented to the Manpower Committee indicates that large segments of Ontario's population do not receive a sufficient quantity of care to maintain them in a state of good dental health. After examining some of the major impediments to the attainment of dental care such as income, education, social and class mores, handicaps of youth or old age, numbers and maldistribution of dentists, and existing patterns of delivery of Dental Services in Ontario, it is apparent that improvement in the dental health status will occur slowly or not at all unless broad dental programmes develop.

The Committee found that well-known methods for the prevention of dental disease are not available in Ontario on a large scale, apart from water fluoridation. Dental disease is only partially preventable by fluoridation of water and patients must receive regular dental care if they are to avoid much pain, disfigurement and premature loss of teeth. We find that although dentists are already extremely busy, large numbers of people do not receive adequate care and any sudden increase in demand for service would overtax the ability of the dental profession to cope with it. Although the Royal Commission on Health Services recognized dental disease as a major health hazard, provincial governments have not implemented the Commission's or alternate dental programmes.

"Dentistry, like many other professions, is undergoing an evolution, due in great part to the demand by a more knowledgeable and ever-increasing public for dental care as part of a total health

programme. From being a profession oriented towards correction of defects and restoration of dentition, it is becoming one that is now equally concerned with education and prevention of disease.”\*

*The Manpower Committee judges that progressive provision of dental care for all school children, and for the Social Assistance Group, is inescapable.* Acceptance of this judgement will result in a substantial increase in dental services supplied to the general public. This will occur in spite of a large reduction of dental caries (50%), and of extractions in childhood, by water fluoridation and by topical application of fluorides to children’s teeth. Fluoride therapy has also been judged of major importance because *the eventual effect may be decreased needs for dental care of adults.*

The Committee on Manpower envisages, as does the Royal College of Dental Surgeons of Ontario and the Ontario Dental Association, increasing delegation of duties and responsibilities to auxiliaries. “... the profession is seriously considering an extension of the duties of the dental hygienist and a greater utilization of her existing duties.” Increasingly, prevention, education and treatment in dentistry will be a team effort and involve a team approach.

Additionally, the Manpower Committee is convinced that the range of duties of auxiliary dental personnel, working under the supervision of the dentist, must be rapidly and substantially expanded, in turn requiring modification and expansion of their training. The duties of the dental hygienist must be upgraded at least to include those activities carried out in the Royal Canadian Dental Corps with greater efficiency by the “*Dental Therapist.*”

*The Dental Therapist carries out all the duties of a Hygienist and in addition is trained to perform:*

1. *Restorative dentistry – rubber dam application, matrix application, placement of filling material, carving or finishing the restoration, polishing;*
2. *Prosthetic dentistry – preliminary impressions;*
3. *Preventive dentistry – impressions for study casts, mouth protectors;*

\* Submission of the Royal College of Dental Surgeons of Ontario and the Ontario Dental Association to the Royal Commission on Health Services.

4. *Periodontics – placement and removal of periodontic packs;*
5. *Oral surgery – removal of sutures, postoperative irrigation.*

*The Dental Therapist works under the direct supervision of a dentist.\**

Additionally, the Manpower Committee believes that the equivalent of the New Zealand Dental Nurse (school), a new type of auxiliary for Canada, save in the Northwest Territories, should be created to serve a school dental health programme. This new auxiliary would be well described as a *Dental Associate*, working under the supervision and direction of the dentist, and only in the School Dental Health Service.

*The Dental Associate carries out all the duties of a "Dental Therapist" and in addition is trained to prepare and fill or extract teeth of children where these procedures are relatively uncomplicated. He works independently but under the supervision of the dentist.\**

The care of school children by dental auxiliaries requires adequate and proper supervision by the dental profession as an essential requirement for the successful development of a School Dental Health Service.

Estimation of the projected needs for dentists and auxiliary personnel are complicated by the following variables: public demand for general dentistry is difficult to predict; full productivity of auxiliary personnel is not yet well established; moreover, the general acceptability of auxiliary personnel by the dental profession is yet to be achieved.

The Manpower Committee, in struggling with the needs for Dental Manpower, had found the following factors inextricably entangled: the past and present statistical picture showing the dentist-hygienist-population ratio; the needs of the people of Ontario for dental care; patterns of practice and effective development and use of auxiliaries; the geographical distribution of dentists and dental auxiliaries.

\* Employment of Auxiliary Clinical Personnel in the Royal Canadian Dental Corp.—*Journal of the Canadian Dental Association*, (Baird et al—Vol. 33, No. 4), pp. 185.

The following quotation is from the report on Health Conditions in the Northwest Territories—1966:

*Our dental treatment program has increased during the year and we have been able to attract competent dentists to Inuvik and Frobisher and to arrange with private dentists at Yellowknife, Hay River and Fort Smith to tour the outstations in their respective areas. We have also recruited two dental hygienists for Inuvik and Frobisher Bay and the DND dentist at Churchill has accepted an offer to join our service and provide treatment at Churchill and in the Keewatin Area. We have also been able to encourage four dentists to work for us during the coming summer—three of these will be based at Inuvik and one in the Keewatin Area—and they will tour extensively to try to provide the very necessary dental care which is so urgently required. The Dental Profession Ordinance has been amended so that we may allow specially trained personnel to carry out fillings and extractions on the written instructions of a qualified dentist. This is the first time in the history of northern dentistry in which we have ever experienced the hope of an improvement.\**

In developing recommendations concerning needs for dental manpower and auxiliary manpower, your committee has had to develop a collective opinion regarding the starting date and rate of development of a School Dental Health Service and increased dental service for the Social Assistance Group.

*The provision of a School Dental Health Service as an optional supplement to existing private practice arrangements, we believe, should start in 1972. Services will continue to be provided in the regular way in private offices, and should be provided also by salaried dental and auxiliary personnel in the School Dental Health Service.*

The School Dental Health Service should be made available starting at age 5 and proceed year by year with successive age groups to avoid impossible demands on total manpower resources of dentists and dental auxiliaries. Pre-school children should be added to the programme at the earliest possible date. By 1986, we believe dental care should be available through private practice and the School Dental Health Service for all children from 3-18 years of age.

Methods of preventing dental decay in children are at present 50

\* Northern Health Service, Department of National Health and Welfare, 1967 (Page 8).

per cent effective. The remaining dental caries result in pain, infection, and loss of teeth, with deformity of the bite and other dental problems in adult life, unless regular reparative services are available from kindergarten through high school. Under present methods of delivering dental care, less than 50 per cent of children's teeth that should have been filled are filled. It is unlikely that social, financial, and geographical conditions will change sufficiently to permit the improvement we judge essential, without leadership and assistance from the Government of Ontario.

Even without the School Dental Health Service there will be an increase in demand for dental care because of better education, larger incomes, and trade union policy. At the same time, more general dental practitioners will be diverted into teaching, research, public health, and the dental specialties.

The committee is able only to consider projected dental manpower needs in a fashion which includes dentists, associates and therapists as a group. For example, adoption of the School Children's Incremental Care Programme, in which one age group or grade is added annually, would require dental schools to graduate 220-225 dentists beyond the present output of Toronto and Western Ontario Universities, unless expanded use of auxiliaries is achieved.

**Dental Associates** — Replacement of at least four-fifths of the dentists in the proposed school dental service by a dental associate (school) auxiliary, together with expanded services from therapists and assistants, under the continuing, responsible supervision of the dental profession, would delay the need for the graduation of an additional (second) hundred dentists for another 8 or 9 years, i.e. to about 1986. Before that time, about 1978, a decision regarding the need for additional dentists would need to be made.

Greatly expanded service by dental auxiliaries, "associates" and "therapists," must be achieved, thereby freeing the dentist from many duties and permitting him to exercise fully his unique skills. In time, more citizens of Ontario will receive more and better dental care and more economically.

The geographical distribution of dentists and dental auxiliary manpower is a factor of major importance in relation both to needs for dentists and auxiliaries, in relation to the dentist-therapist-population of Ontario. Existing practising dental hygienists are poorly distributed throughout the province. The Manpower

Committee believes the same pattern will repeat itself for dental "associates" and "therapists" unless they are educated in other colleges, as well as those associated with the dental schools in Toronto and London. In 1966, 58 per cent of hygienists were located in Toronto. Only 33 of 262 communities in Ontario had hygienists (12.6 per cent) and some of these were not working.

The Manpower Committee also judges as inescapable that the Government of Ontario will further assist the Social Assistance Group in obtaining dental care.

## DENTIST-POPULATION RATIOS IN ONTARIO

The dentist-population ratio provides a usable means to which nearly all manpower studies have resort. As a means of determining an interim objective for our studies, it is perhaps illuminating to consider past dentist-population ratios in Ontario and in other countries. These are illustrated in Tables I and II on pages 75-76.

Table I shows the ten year census numbers of dentists and the population-dentist ratios from 1911 to 1961 and year by year breakdown from 1961 to 1967. The figures are for December 31st of the year shown from 1961 to 1967. Although the intervening years are not shown, the most favourable ratio of dentist to population was that of 1853 persons per dentist reached in 1931. Ever since that time, we have tended to lose ground until our ratio reached 1/2585 in December of 1967. As will be shown later, however, the expected flattening out in the curve of population increase, together with the output of new dental schools, should make 1967 another turning point after which the ratio should again begin to improve.

As a further commentary on the Ontario ratios, it is interesting to look at recent ratios in Ontario and other countries in which dentistry is fairly well developed. These are shown in Table II.

This Table shows that the Ontario ratio in 1931 compares very favourably with ratios in other countries at the turn of the decade being better than that achieved in any other jurisdiction except Denmark, Germany, Norway, and Sweden.

Ontario's 1961 and 1967 ratios are inferior to all countries listed in Table II save New Zealand, Australia, France, the United Kingdom, and Canada as a whole. *If an arbitrary objective of ratio and target date for improvement is selected, the stress upon the*

*educational system can be statistically evaluated. To illustrate this thesis, the restoration of the 1931 Ontario ratio of 1/1850 by the year 1986 has been studied.*

*Modifications to this objective in terms of ratio and target date, and through alterations in the pattern of delivery of dental services by means of the greater use of para-dental personnel, will be dependent upon the judgment of the Manpower Committee.*

### Population Projections

During the past week\* we have received two new population projections for Ontario from the Economic Analysis Branch of the Treasury. These two projections provide a "median" and a "high" projection for the years 1967 to 1991. Both projections are based on a "net" immigration into Ontario of 30,000 per year, projected at a constant level. The major difference between the two comes in the fertility rates applied to the "native" sector. The "median" projection assumes falling rates until 1971 and then the maintenance of the 1971 rate until the end of the projection period. The "high" projection on the other hand assumes a gradually rising fertility rate for all age groups except 45-47, until the year 1991. The results of these two different assumptions produce populations as follows:

Year	Median Projection	High Projection
1971	7,457,000	7,531,000
1976	7,927,000	8,208,000
1981	8,463,000	9,004,000
1986	9,033,000	9,890,000
1991	9,580,000	10,818,000

Due to the fact that it takes almost a decade between the initial planning and the initial output of new medical and dental schools, we have deemed it advisable not to underestimate the population for which we will have to provide. Even the "high" projections indicated above do not seem unduly high in the light of past experience. For this reason, therefore, we have chosen to test our own planned and projected medical and dental schools programmes against the higher of these two projections.

\* June, 1968

## **Input and Attrition in the Ontario Dental Force During the Nineteen Sixties**

Before going ahead to apply dentist-population ratios to our forecasts of population, we must determine the input and attrition in the dental force experienced in recent years and apply this attrition ratio to the planned output during the next five years to see what effect expansion programmes now in progress will have on the dentist supply situation and ratio in 1971-72, the year when the current programme will be reaching maturity. Table III looks at our input and attrition experience during the nineteen sixties.

Table III illustrates in its first column the number of registered dentists in Ontario at the beginning of each year. The next two columns show the number of Ontario graduates and immigrant dentists who were given licences during the year. By adding them to the initial figure in each year it produces a theoretical total of the number of dentists we should have at the end of each year. In actual fact, however, we have a lesser figure, and the difference between the theoretical and "actual" figures gives us our "attrition" loss in terms of dentist bodies. By comparing this figure to the average number of dentists during the year, we are able to arrive at the percentage attrition rate. During the nineteen sixties this has varied between 2.21 and 4.56 per cent, with an average of 3.54. For the purpose of future projections we will use a rounded attrition rate of 3.5 per cent.

## **Output and Dentist Population Ratios Under Current and Projected Programmes**

Under current programmes of dental school construction, the University of Toronto is projected to carry on at its current level of 125 graduates per year indefinitely while the University of Western Ontario is projected to raise its output from 7, beginning in 1969-70, to 50 in 1975-76. In order to increase the production of dentists as rapidly as possible, it is suggested that these two schools add 25 new graduates between them by 1972-73, and accordingly the following projections are based on an increase of 12 in Toronto output by 1972-73 and of 13 in University of Western Ontario output, raising them to a total of 137 and 45 respectively, for a total of 182. By 1974-75 it is suggested that Western's level reach 50, advancing this target date by one year. Table IV shows the effect on the dentist-population ratio of such an acceleration in the two existing schools up to 1976-77.

While the foregoing programme will improve the dentist-population ratio to 1/2357 by 1976-77, it is suggested that, by 1977-78, two more schools with an output of 60 dentists each be ready to graduate their first classes. Table V shows the effect of the addition of these two new schools over the period up to 1990-91.

Table V shows that using the "high" projection, the introduction of two new schools of 60 graduates each in 1977-78, and the maintenance of this level of output will reduce the dentist-population ratio to 1/1902 in 1985-86 and to 1/1840 in 1990-91. With a drop of only 3 per cent in the "high" population in 1985-86, it would result in the achievement of a ratio of 1/1850 in that year.

## AUXILIARY DENTAL PERSONNEL

### Dental Hygienists

The training of dental hygienists on any substantial scale in Ontario has been a fairly recent development. This is illustrated by Table VI (page 80), which shows the number of practising hygienists in the province, since 1960.

This Table shows that although there is still only one hygienist to every twelve dentists in the province, there has been a marked improvement in the situation during the last eight years. The ratio of one hygienist to every twelve dentists is equivalent to the best situation, relating to population, in other provinces of Canada. The ratios in these other provinces in 1967 are shown in Table VII.

Although Nova Scotia and Alberta have a slightly better ratio of hygienists to dentists than Ontario, their ratios of dentists to population are inferior to this province. *The ratio of hygienists to dentists in the United States however is 1/6 and the dentist to population is also better (U.S.A. 1961, 1 to 1850 Ontario 1967, 1 to 2585).*

### Assessing Need for Auxiliary Dental Personnel

There are various methods of assessing the need for auxiliary dental personnel, such as Hygienists, Therapists, and Associates. These are as follows:

- a. In relation to Dentists under whose professional supervision they work.

- b. In relation to facilities – (beds etc. for nurses).
- c. In relation to population.
- d. In relation to specific possible programmes.

Since Hygienists have worked principally as assistants and under the supervision of dentists it would not be reasonable to estimate the need for this category of auxiliary on a separate basis from the supply of dentists.

The facilities with which a Hygienist works are also usually supplied by a dentist. The Committee has had also to estimate the need for additional Hygienists and other auxiliary dental personnel on the basis of specific contemplated programmes—such as the School Dental Health programme, and the Social Assistance Group programme. In such a situation there would be dentist supervision of all auxiliary personnel but the proportion of auxiliary dental personnel per dentist would be much greater than under existing circumstances of private practice.

It should be pointed out that facilities to train Hygienists as they presently exist, and Associates and Therapists as defined, can be brought into being much more rapidly and at much lower cost than full scale Faculties of Dentistry.

### Requirements for Hygienists as Presently Qualified

Much discussion has taken place as to the numbers of Hygienists that should be graduated. *At the present time only about 8 per cent of the dentists in the province employ Hygienists and full appreciation of their usefulness is not widespread amongst dentists who graduated prior to the development of this type of auxiliary.*

In order to overcome this problem, the Committee has concluded that the Government of Ontario should offer financial inducements to encourage dentists to use Hygienists and Therapists. Substantial expansion of the number of (hygienists) therapists trainees is necessary. One therapist for each graduating dentist would require an approximate tripling of present output within the next five years, if the 1:1 ratio between (hygienists) therapists and dentists would be reached by 1991.

Tempting as such limited expansion may be in relation to the

*status quo* and the existing pattern of delivering dental services, it does not provide for what the Committee judges to be inescapable increases in delivery of Dental Services and specifically:

1. A School Dental Health Service (incremental care).
2. Provision for aid to the Social Assistance Group, including home care with mobile dental units.

### **Use of Auxiliary Dental Personnel in an Incremental School Dental Programme**

The Manpower Committee urges that the use of auxiliary dental personnel on a large scale in an incremental School Dental Health Programme is a logical and inescapable development. The Canadian Dental Association is presently working on plans for a school-child programme to be carried out exclusively in private offices, rather than in school "clinics." To this extent it may hasten the appreciation of the utility of (hygienists) therapists in private dental offices.

### **Hygienist-Therapist Requirements**

The most realistic guideline that can be offered at this time on Hygienist-Therapist training requirements is that it must relate to the following:

- the output of newly graduating dentists;
- the existing population of dentists;
- financial inducements by government to encourage dentists to use auxiliary dental personnel;
- legal sex requirements and attrition;
- new programmes and new patterns of delivery of dental services.

### **Conclusions**

1. The *exact "mix"* of dental and auxiliary *dental manpower must be evolved for Ontario*.
2. Water fluoridation and topical application of fluorides, and new programmes judged inescapable such as an incremental *School Dental Health Programme and a Social Assistance Group Programme* will bear heavily on the Manpower needs.
3. Auxiliary dental personnel, "Associates" and "Therapists"

(upgraded Hygienists) must relieve dentists of many tasks so dentists may apply fully their knowledge and skills to solve problems which only they are qualified to undertake.

4. The general increase in the level of education, higher standards of living, and labour union policies, together comprise potent forces which the Committee believes will lead to substantially increased demand for dental services.
5. An increasing scope and service of dentistry will be made possible by science and will be balanced, approximately, by the increasing professional productivity of the dentist with auxiliary personnel working under his supervision.
6. The conclusion is put forward that a dental population ratio of 1/1850 by 1990 is the optimum goal.
7. Dental associates (New Zealand Dental Nurses) should be trained in sufficient numbers for the School Dental Health Services in the light of administrative developments by the proposed Dental Health Division of the Department of Health.
8. Dental Therapists, as established by the Royal Canadian Dental Corps, should be trained and, in the future, the existing educational programme for hygienists should be upgraded to provide therapists.

TABLE I  
DENTIST-POPULATION RATIOS IN ONTARIO, 1921-67

Year	Number of Dentists	Dentist-Population Ratio (persons per dentist)
1911	1127	1/2242
1921	1377	1/2130
1931	1852	1/1853
<u>1941</u>	<u>1891</u>	<u>1/2003</u>
1951	2103	1/2126
1961	2522	1/2473
1962	2552	1/2485
1963	2599	1/2481
1964	2623	1/2511
1965	2687	1/2505
1966	2732	1/2548
1967	2805	1/2585

Country	Year	Dental-Population Ratio
Sweden	1964	1/1300
Norway	1964	1/1400
Denmark	1964	1/1700
Germany	1964	1/1800
U.S.A.	1966	1/2100
Ontario	1961	1/2473
Ontario	1967	1/2585
France	1964	1/2700
Australia	1964	1/2800
New Zealand	1963	1/2800
Canada	1966	1/3064
United Kingdom	1963	1/3700

TABLE III  
AVERAGE ATTRITION AMONGST ONTARIO DENTISTS

Year	Number of Dentists Start of Year	Ontario Grads.	Theoretical Total	Immigrants & Others	Actual Total End of Year	Loss in Numbers	Average Dentist in Year	Percent Attrition
1960-61	2513	89	2629	27	2522	107	2518	4.25
1961-62	2522	68	2608	18	2552	56	2537	2.21
1962-63	2552	80	2678	46	2599	79	2576	3.07
1963-64	2599	119	2742	24	2623	119	2611	4.56
1964-65	2623	114	2763	26	2687	76	2655	2.86
1965-66	2687	118	2844	39	2732	112	2710	4.13
1966-67	2732	113	2907	62	2805	102	2769	3.68
							Average Attrition	3.54

TABLE IV

THE EFFECT OF PLANNED OUTPUT, IMMIGRATION AND  
ATTRITION ON DENTIST-POPULATION RATIOS,  
1967-68 to 1976-77

Academic Year	Sources of New Dental Manpower			To maintain Status Quo			Resulting Dentist-Population Ratios		
	Planned Dental School Output	Immigrant grants & Other Prov.	Total Infusion	Population Increase	To keep up with Popl. Inc.	To make up for Attrition 3.5%	Residual for Ratio Improvement	Total Dentists After Graduation	Projected Population
1967-68	125	25	150	125,000	48	97	5	2,822	7,275,000
1968-69	125	25	150	85,000	33	99	18	2,873	7,360,000
1969-70	132	25	157	85,000	33	101	23	2,929	7,445,000
1970-71	133	25	158	86,000	33	103	22	2,984	7,531,000
1971-72	157	25	182	126,000	49	104	29	3,062	7,657,000
1972-73	182	25	207	130,000	50	107	50	3,162	7,787,000
1973-74	182	25	207	135,000	52	111	44	3,258	7,922,000
1974-75	187	25	212	140,000	54	114	44	3,356	8,062,000
1975-76	187	25	212	146,000	57	117	38	3,451	8,208,000
1976-77	187	25	212	149,000	58	121	33	3,542	8,347,000

TABLE V

THE EFFECT OF PLANNED OUTPUT, IMMIGRATION AND  
ATTRITION ON DENTIST-POPULATION RATIOS,  
1977-78 to 1990-91

Academic Year	Sources of New Dental Manpower				To maintain Status Quo				Resulting Dentist-Population Ratios			
	Planned Dental Output	Immigrants & Other Prov.	Total Infusion	Population Increase	To keep up with Popl. Inc.	To make up for Attrition	Residual for 3.5% improvement	Total Dentists After Graduation	Projected Population	Projected Population	Projected Population	Projected Population
1977-78	307	25	332	155,000	60	124	148	3,750	8,512,000	1/2270		
1978-79	307	25	332	159,000	62	131	139	3,951	8,671,000	1/2195		
1979-80	307	25	332	164,000	64	138	130	4,145	8,835,000	1/2131		
1980-81	307	25	332	169,000	65	145	122	4,332	9,004,000	1/2078		
1981-82	307	25	332	171,000	66	152	114	4,512	9,175,000	1/2033		
1982-83	307	25	332	175,000	68	158	106	4,686	9,350,000	1/1995		
1983-84	307	25	332	177,000	69	164	99	4,854	9,527,000	1/1963		
1984-85	307	25	332	180,000	70	170	92	5,016	9,707,000	1/1935		
1985-86	307	25	332	180,000	70	176	86	5,172	9,890,000	1/1902		
1986-87	307	25	332	183,000	71	181	80	5,323	10,072,000	1/1892		
1987-88	307	25	332	186,000	71	186	75	5,469	10,256,000	1/1875		
1988-89	307	25	332	166,000	72	191	69	5,610	10,442,000	1/1861		
1989-90	307	25	332	187,000	72	196	64	5,746	10,629,000	1/1850		
1990-91	307	25	332	189,000	73	201	58	5,877	10,818,000	1/1840		

TABLE VI  
PRACTISING DENTAL HYGIENISTS IN ONTARIO  
(1960-67)

Year	Number	Hygienists to Dentists Ratio
1960	42	1/60
1961	48	1/53
1962	58	1/44
1963	57	1/46
1964	98	1/27
1965	116	1/23
1966	189	1/14
1967	238	1/12

TABLE VII  
DENTAL HYGIENISTS, NUMBERS AND RATIOS IN OTHER  
CANADIAN PROVINCES - 1967

Province	Number	Ratio
Newfoundland	1	1/51
P.E.I.	2	1/15
Nova Scotia	24	1/10
New Brunswick	2	1/65
Quebec	7	1/221
Manitoba	23	1/13
Saskatchewan	10	1/22
Alberta	50	1/10
B. C.	26	1/30



## *Section III*

### **NURSING MANPOWER**



## SECTION III

### *Nursing Manpower*

#### **Introduction**

The Report on Nursing Manpower was presented to Council in June 1969. It embodied the main thinking of the Committee up to that time.

The background documents are attached to this section as Appendices A, B, C, and D. Appendix A consists largely of an examination of the utilization of our nursing resources in Ontario, while Appendix B deals with matters of supply, attrition, and output. Appendix C takes a closer look at the nurse as an adjunct to the doctor, and Appendix D examines rates of turnover in the nursing profession.

#### **Conclusions and Recommendations**

In this Report on Nursing Manpower, while we have highlighted many important elements of the subject, we have been less able to be specific at this point in time regarding precise numbers to be trained and the facilities required. This is due to the following factors:

- a. The terms of reference of the Committee instruct us to be concerned with the "demand" for health manpower, as well as the supply. The demand for nursing manpower, however, is really a reflection of the demand for specific types of services which in turn is a reflection of the health care delivery system. Specifically, our present health care delivery system would seem to call

for a disproportionately high number of hospital days of care per 1,000 population, which in turn means a disproportionately high demand for numbers of hospital nurses. Any long-term evaluation of the problem is contingent upon long-term policy concerning delivery of health care. Without this, nothing more can be done than project the *status quo*—and this is no basis for long-term planning.

The first problem with which we must grapple, therefore, is the health care delivery system, even though this might not appear to be the direct term of reference of this Committee. No group of personnel is more dramatically affected by it than the nursing profession!

- b. Once we have delineated the role of the hospital in the community in terms of days of care per 1,000 of the population, we are faced with the “internal” organization of hospitals in terms of their entire staffing patterns and nursing organization. The role of the nurse today encompasses three levels of training and work: university training, and levels of responsibility; diploma training, and levels of responsibility; and R.N.A. training, and levels of responsibility. Many hours of nursing time could be saved by the scientific organization of these three levels into an efficient working team as exemplified by the University of Michigan system, which might save, in itself, up to 20 per cent of nursing time in general hospitals.

As an example of the need for further organization, the lowest level of this three-tier nursing structure, the R.N.A., today performs a high proportion of the basic patient-care work of the hospitals. In doing so, however, her function becomes interrelated and blended into the work being done by other categories of workers—orderlies, ward aides, ward clerks, nurses and others. It is difficult to define, therefore, where the duties of the R.N.A. begin and end. We cannot consider the role of one element of hospital staff therefore in isolation from the roles of all other members of hospital staff.

- c. A basic problem in relation to nursing is that it is a 24 hour a day, 7 day a week profession, and it is an essentially female area of endeavour. This tends to contribute to a high attrition rate, which, if it could be stemmed, would largely solve most of the manpower problems in this field. The labour and personal outlook today is largely “self-centred” and regards unfavourably

jobs that must go on by day and night. Certain things can be done to ameliorate this situation, but the basic problem will be with us. A minimum of hospital care and a maximum of ambulatory and home care, will do much to reduce the demand for nursing manpower.

The solution of the foregoing problems requires more than a conceptualization on paper, since the building blocks of which the system is made consist of human beings with their own individual motivations and ideas. The "incentive structure" which could bring about many of the desired changes already exists in one jurisdiction in California. As described in the *Report of the National Advisory Commission on Health Manpower in the United States*, Volume II, it is outlined in the quotation below. In this quotation, the term "medical care" is synonymous with "health care" in hospital, in group medical facilities, and in the home.

*The philosophy exemplified in the Health Plan is that the role of management is to find the best arrangement of people and facilities to produce the desired product. In this case the desired product is high quality medical care, and the best arrangement is the one which allows this product to be produced at lowest cost. Because of the traditions and attitudes in the medical profession, radical change in the methods of dispensing medical care is not easily achieved, and the Health Plan management has certainly not been able to exploit all of the potential economies in the provision of medical care. Still, the accomplishments of Health Plan management are impressive.*

*The very existence of the Kaiser medical care programme is attributable to the ability of central management to find an organizational structure that would allow central control over the costs and general shape of the medical care programme, and, at the same time, allow sufficient autonomy to the Medical Groups to make them professionally attractive to physicians. Autonomy was achieved by allowing the physicians to form independent partnerships. Control was achieved through the ground rules for the negotiations over the annual contract between the Health Plan and each individual Medical Group.*

*The negotiated contract provides that the Health Plan will pay the Medical Group an essentially fixed amount per*

*member for all of the physicians' services provided by the Medical Group during the year. The negotiation process, however, is not a pure bargaining one. Rather, the basis for determining the size of the contract payment is a detailed budget prepared by the Medical Group. Individual budgets are prepared by line supervisors, subject to review at various levels, and finally consolidated into the overall budget.*

*Detailed planning figures and forecasts are provided the budget preparation centres in order to make the budget as accurate as possible. In California regions, the negotiated contract also contains a feature termed a "contingency contractual payment", or CCP, that provides the Medical Groups with incentives to avoid lowering their costs by transferring expenses to Kaiser Hospitals. The CCP works in the following manner: After the budgets of the Medical Groups and the Kaiser Hospitals are prepared, an amount equal to about 5 per cent of total budgeted expense is added to the combined budget. The contract payment agreements of the Health Plan with the Medical Groups and Kaiser Hospitals include this 5 per cent CCP. The CCP is always divided equally between the Kaiser Hospitals/Health Plan and the medical organizations, but the CCP is reduced to the extent that the hospitals run over their budgeted costs, and is increased to the extent that hospital costs are under the budget. If Medical Group costs exceed their budgeted estimate, the difference is taken only from the physician's share of the CCP, while the size of the overall CCP remains undiminished. Thus, in order to insure the maintenance of physician income and the maximum incentive payment, the Medical Groups and the Hospitals must co-operate in keeping their costs low.*

Large medical groups already exist in Ontario and there are smaller nuclei for many other large groups. In order to achieve the same system as that described above, the services of these medical groups need to be linked financially to the services of individual hospitals and the population which these hospitals are intended to serve—with an economic incentive for efficient and economical use of hospitals by the doctor. The financial link could be brought about by a *unified premium* for both medical and hospital services given by Hospital A and Group A. Persons in the community would have to be approached specifically and asked if they wished to participate in this arrangement. After the formation of a three-way contract

between hospital, medical group and subscriber, Kaiser management techniques could be introduced in one or more areas on an experimental basis. Such an arrangement should not prove unattractive to the medical profession because:

*The separation between the Medical Groups and the Health Plan exists in both legal and practical terms. The Medical Groups are partnerships of physicians and are self-governing. The Medical Groups quite jealously guard what they consider to be their professional prerogatives; thus each individual Medical Group sets its own standards of practice and determines its own method of operation. Also, the Medical Groups have the right to determine when the Health Plan can enrol new individual and group members.*

It would seem, from a consideration of the foregoing circumstances, that it would not be impossible to experiment with Kaiser management techniques in Ontario if we were willing to re-examine our present system. The consequence of this might be that we could reduce significantly our needs for nursing manpower.

## **BASIC FINDINGS CONCERNING NURSING, AND RECOMMENDATIONS FLOWING THEREFROM**

### **I. TO COUNTERACT ATTRITION**

#### **Comment**

Input into the Nursing System is seriously depleted by an outflow or attrition which appears to be as high as 10 per cent of the total nursing work force every year. This means that between 75 and 80 per cent of the total annual new production of nursing personnel each year is used simply to make up for losses.

If the rate of attrition could be markedly reduced, our problem with respect to supplies of nursing personnel would be greatly modified, whatever the health care delivery system or the hospital staffing pattern.

#### **RECOMMENDATION 32**

*THAT flexible and attractive working conditions and "career incentive" factors must be introduced on a*

*large scale in order to modify the serious level of attrition. Since the cost of training an average nurse is approximately \$11,000, even greater incentives for those already trained would be much less expensive than building and operating the training facilities with which to replace them.*

*Additional administrative arrangements of the type which might help to reduce attrition, and for which experimental application is recommended, for example, are as follows:*

- a. the organization of day nurseries and elementary teaching facilities either in or adjacent to hospitals, for the young children of married nurses who might thereby be enabled to remain at work;*
- b. the inauguration of a province-wide system of clinical certificates or diplomas, giving nurses province-wide status for levels of competence achieved in clinical nursing. The list of certificates available would be established and awarded by provincially recognized post-secondary educational institutions. Appropriate province-wide standards must be established and maintained as well as national standards;*
- c. rates of remuneration for nurses should be related to operational responsibility, clinical and/or administrative.\**

## **II. TO REDUCE DEPENDENCE ON IMMIGRANT NURSES**

### **Comment**

Immigration of nursing personnel during the past five years has risen from 1,227 in 1964 to 2,650 in 1968, for an average approaching

\* Action on Recommendation 32 was deferred until the opinion of the Committee on the Education of the Health Disciplines could be obtained.

2,000 per annum. The Committee is of the opinion that it is both unwise for Ontario to depend to this extent on an outside supply of nurses that could disappear at any time and it is unfair to the countries and provinces from which these nurses came, for us to encourage them.

**RECOMMENDATION 33**

*THAT, in calculating future requirements for the training of nursing personnel, Ontario should reduce its dependence on the supply of nurses from other countries and other provinces.*

**RECOMMENDATION 34**

*THAT a basic rate of immigration should be assumed, based on the principle that immigrant nurses form the same proportion of all immigrants as resident nurses form to all residents of Ontario.*

### III. DIFFERENT LEVELS OF NURSING EDUCATION

#### Comment

In considering the whole nursing work force, it is necessary to make a distinction between three different levels of preparation—Degree, Diploma, and Registered Nursing Assistant. Examination of the data covering functional distribution of nursing personnel in hospitals and also an analysis of leadership positions as a percentage of total personnel in all branches of nursing, both in and out of hospital, showed that the functional groups broke down into roughly the following categories:

Supervisory or Leadership	—	20 per cent
Staff Nursing	—	50 per cent
Assistant Nursing	—	30 per cent

One is naturally led to try to equate levels of educational preparation with levels of function, but in point of fact we find that less than 50 per cent of the most highly trained personnel (Degree) are employed in Supervisory or Leadership positions. Inversely this means that half the Leadership positions are filled by those with

Special Certificate or non-degree training, which leads us to the conclusion that, while 20 per cent or more should have superior training, such superior training does not necessarily imply a university degree. We must also keep in mind, however, that if we want to upgrade the whole status of nursing as a "Career Incentive" measure, we should not downgrade "Nursing" in its most sophisticated patient-care medical sense, as distinct from the supervisory duties which we have equated with "Leadership." A goodly proportion of the most highly educated and trained nurses, therefore, must be encouraged to exercise their skills in care of the patient, as recognized clinical specialists with special distinctions that set them apart as an elite group. Our conclusions lead to the following recommendations:

*RECOMMENDATION 35*

*THAT, as an objective, approximately 20 per cent of nursing personnel should achieve advanced education in one of the following ways:*

- a. a basic or post-basic course leading to a university degree—B.Sc.N.;*
- b. a postgraduate course leading to a diploma or certificate awarded by a provincially recognized post-secondary educational institution.*

As a corollary to the above, it is the opinion of the Committee that the Post-Basic Degree Nurse is less subject to the winds of attrition—if she has practiced for 3-4 years after receiving her Diploma and before entering university for her Degree course. In terms of our calculations and in light of the projected output of the university schools, this means an objective of approximately 400 basic degree graduates and 400 post-basic degree graduates, for a total of 800. Individual school programmes are currently projected to a total of approximately 500 Basic Degree and 325 Post-Basic Degree nurses, by 1975-76. This leads therefore, to the further recommendation:

*RECOMMENDATION 36*

*THAT university schools of nursing remain flexible in their future planning and give equal emphasis to the post-basic degree course and the basic degree course. Post-basic degree students—i.e., diploma nurses who have practised for 3-4 years—should be actively*

*sought out. Special economic incentives should be provided for the education of this career group.\**

As a further corollary to the foregoing it is felt that, as an interim guide, while this Committee gives further consideration to the problem of nursing, the following proportions be applied to Diploma and R.N.A. output:

*RECOMMENDATION 37*

*THAT of total nursing output, approximately 50 per cent should be diploma graduates and approximately 30 per cent should be registered nursing assistants (R.N.A.'s).*

#### IV. NURSING ORGANIZATION IN HOSPITALS

##### Comment

The type of "Team Nursing" organization developed at the University of Michigan suggests that General Hospital nursing requirements might be reduced by up to 20 per cent if a more efficient deployment of hospital staff could be brought about. This involves in part:

- a. A change in the organization for providing nursing care in hospitals.
- b. Delegation of non-nursing duties to non-nursing staff.

Revision of the system of delivery of nursing services can be brought about only by degrees and over the long term. Time is required for reallocation of professional duties and for change in the understanding and attitudes of personnel already performing specific functions, but nevertheless, substantial room for improvement exists in this area. The University of Michigan system for a general hospital is illustrated below.

\* Action on Recommendation 36 was also deferred until the opinion of the Committee on the Education of the Health Disciplines could be obtained.

## Under a Director and Assistant Director

### (a) Day Nursing

Per 100 beds	1 Supervisor – Clinical 1 Supervisor – Admin.	Team 1-25 beds Team 2-25 beds Team 3-25 beds Team 4-25 beds	For each team 1 Team Leader 1 R.N. 1½ R.N.A.'s
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### (b) Evening Nursing

Per 100 beds	1 Supervisor – Both	Team 1-50 beds Team 2-50 beds	For each team 1 Team Leader 1 R.N. 1½ R.N.A.'s
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### (c) Night Nursing

Per 200-300 beds	1 Supervisor – Both	Team 1-50 beds Team 2-50 beds Team 3-50 beds Team 4-50 beds	For each team 1 Team Leader 1 R.N. 1½ R.N.A.'s
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### *RECOMMENDATION 38*

*THAT more efficient utilization of staff along the lines of the team nursing concept, including delegation of non-nursing duties to non-nursing staff, should be encouraged wherever possible.*

## V. EXPERIMENTAL APPLICATION OF KAISER MANAGEMENT TECHNIQUES

### Comment

Our studies have included an examination of what would happen to our nursing personnel requirements if less patient care were carried out in hospital beds and more care were given on an ambulatory basis. Adjustments have been worked out for the Ontario situation, on the basis of Kaiser Plan experience in California corrected for age group distribution, and the assumption that the number of nurses engaged in out-of-hospital activities as nurse medical assistants or associates will double by 1975 and double again by 1980.

We cannot accept that the Kaiser experience is easily transferable to the Ontario scene but we can recommend that its extremely sophisticated management techniques be given careful study and deserve application on an experimental basis in Ontario. Major economies in manpower and capital and operating costs of health services would automatically follow successful substitution of ambulatory patient care for in-hospital care and increased efficiency of utilization of hospital beds.

*RECOMMENDATION 39*

*THAT a technique of health care delivery management, utilizing economic incentives for efficient use of hospitals, similar to the Kaiser system, be introduced on an experimental basis in one or more communities in Ontario. This technique should be carefully studied with a view to reducing in-hospital days of care per 1,000 population and, therefore, the numbers of nursing staff involved.*

*RECOMMENDATION 40*

*THAT no increase should be made in present nursing student enrollment estimates for the period ending in 1973.*

*Revised estimates should now be made for the period after 1973, based upon increased demand for nurses outside general hospitals and decreased demand within such hospitals.*



*Appendix A*

**BACKGROUND PAPER ON**

**THE DEMAND FOR NURSING**

**SERVICES IN ONTARIO**



## APPENDIX A

### *The Demand for Nursing Services in Ontario "ILLUSTRATIVE PAPER"*

Solving the problems of nursing manpower requires serious consideration of the health care delivery system and of the staffing patterns of hospitals throughout the province. These factors have an important impact on the number and kinds of nurses needed. Any long-term solution of nursing manpower needs requires definition of the framework within which nurses will perform their duties.

Nurses have a very pervasive presence in all sectors of our present health care delivery system—probably more so than any other category of health personnel, if for no other reason than that their numbers are so great—approaching 50,000 (R.N. and R.N.A.) at the present time. They are the mainstay of hospitals, they are the agents of community health work, and they help doctors in their offices. A major problem with nursing manpower seems to be that too many people find their way into hospitals to have their medical problems examined and too few are treated as ambulatory patients in facilities operated in conjunction with or separately from the hospitals. A great deal of discussion has occurred as to whether group medical practice is more efficient than solo practice—but the fundamental question appears to be the inter-relationship between various types of medical practice and the hospital facilities with which they work. Group practice, in its most fully developed form, is able to replace many of the functions of the hospital facility, whereas solo medical practice cannot replace these hospital functions—it depends on them. Doctors working together in a sufficiently large group, representing a sufficient diversity of specialties, can perform the same function for a community as a hospital, in terms of providing scientific diagnostic

and treatment facilities on an out-patient basis. A solo practitioner cannot afford such facilities; he either uses those of the hospital on an out-patient basis or utilizes "private" laboratory or x-ray facilities for ambulatory patients.

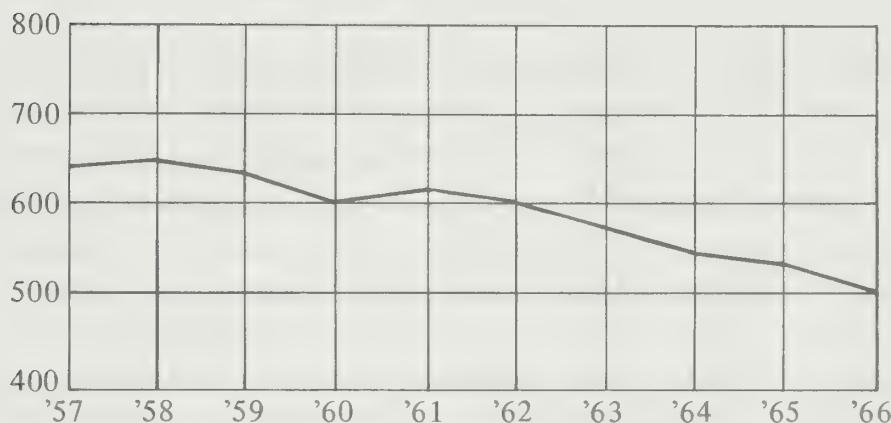
This means that there are too many nurses used in hospitals when hospital beds are used for the investigation of patients—a task which could be done equally well if nurse manpower were transferred to the medical office or clinic. At the same time, General Hospital beds should be staffed to provide for the treatment of every type of major illness and emergency.

A further factor of great influence in this matter is the manner of financing health services. Under the present system of separate financing of hospital facilities and services on the one hand, and medical services on the other hand, many costs still are transferred to the hospital system even though it may well cost the community much more to have a specific treatment given in a hospital than it would on an ambulatory basis. In other words, the division of financial responsibility makes it difficult to achieve an integrated approach to the most efficient utilization of human and physical resources in the health field; it is a result that is implicit in the system.

### Hospital Days of Care Per Thousand in Ontario as Compared to the Kaiser Plan in California

The striking figures which have suggested an approach to the nursing manpower problem based on a shift in emphasis from the hospital to the ambulatory patient medical facility, are the acute general hospital days of care per 1,000 population under the Kaiser Plan in California as compared to those under the O.H.S.C. in Ontario—500 per thousand in California compared to almost 2,000 per thousand in Ontario. To be sure, the populations covered in both instances are not identical in terms of age groups and exclusions, *but adjustments have been made for these factors on the basis of the information presently available to us* and we find that present hospital nursing requirements could be cut by as much as 25 per cent, which would then allow for doubling of the nursing personnel engaged in Public Health, Occupational Health, and doctor's office duties.

The record of days of hospital care under the Kaiser Plan is shown in the following chart, which shows a drop from 650 in 1958 to 500 in 1966.

**KAISER PLAN\*****Hospital Days per 1,000 Members Per Year  
1957-1966  
(Northern California Region)**

Source: Kaiser Annual Report, 1966.

\*Excluding chronic, rehabilitative, convalescent and psychiatric care in hospitals.

Days of hospital care in Ontario, shown in Table I from the latest report of the O.H.S.C., indicate a rising trend to 1,970 in 1967, based on the cumulative total of active, psychiatric, chronic, and convalescent days. If the mental hospital days of care, numbering 888 per thousand are added, it raises total Ontario days of care to 2,858 per 1,000 in 1967. (Table I, page 107.)

### **Age Distribution Under Kaiser and in Ontario**

These two sets of figures are not comparable until we make adjustments for omissions and age and sex differences. The age analysis available to us, at this point in time, indicates differences between the two sets of populations as shown in Table II.

These age group categories are very wide but nevertheless they show the broad impact of these differences. They show that the 0-44 age group in Ontario is 99.1 per cent of the Kaiser group, the 45-64 in Ontario is 85.8 per cent of that in California, while the over-65 age group in Ontario is 188.4 per cent, or almost twice as great at this age category in the Kaiser plan. If we apply these adjustments to indicators of the number of days of hospital care required by each age group, we can then see how many days of care per thousand the Kaiser group would need if its age composition was the same as that

of Ontario. We would also have to add to the Kaiser figures the equivalent of the Ontario Chronic, Convalescent, Mental Hospital and Psychiatric Care in general hospital days, which do not play a significant part in the Kaiser experience.

### Ontario Hospital Beds per Thousand for Parallel Age Groups

The indicator which we have used for the relative need for hospital days of care by different age groups in Ontario is the O.H.S.C. analysis of *Beds* per 1,000 for these age groups. Hospital *Beds* per 1,000 are derived from the need for hospital *days of care* per 1,000 for each age group, and enable us to make calculations in this area. The O.H.S.C. beds per 1,000 figures are indicated in Table III.

Because we have only a unified figure for the 0-44 group under the Kaiser plan, we need to convert the figures in Table III into an average for this age group in Ontario as well, which comes to 2.99.

The Kaiser plan in California applies to about 1.5 million people whose ages are distributed as in Table IV. If we apply Ontario bed ratios as indicated above to these 1,500,000 Kaiser people, their bed requirements would be as in Table IV.

If the age distribution of the Kaiser Plan population were altered to conform to the same pattern as the Ontario population (second column in each table) their total bed requirement would then rise to the level as shown in Table V.

These tables indicate that Kaiser's bed requirements under the Ontario population distribution would go up by 9 per cent over present requirements (7,176 over 6,589) largely because of the increase in the over 65 age group in Ontario. The Kaiser figure of 500 hospital days of care per 1,000 would therefore go up 9 per cent to 545 days per 1,000, if Kaiser were dealing with a population of the same age distribution as that which exists in this province; again, Kaiser effectively excludes convalescent, chronic and psychiatric care in general hospitals as well as long-stay rehabilitation care.

### The Effect of Team Nursing

Having shown how hospital active treatment "days of care" should be adjusted upward in accordance with the age composition of the population, we can now show how the number of nurses required to give that number of days of care under the present Ontario system,

might be reduced by 20 per cent under current levels by the utilization of the principle of team nursing as exemplified by the system devised at the University of Michigan. This concept is illustrated below.

## UNIVERSITY OF MICHIGAN TEAM NURSING ORGANIZATION

### Under a Director and Assistant Director

#### (a) Day Nursing

Per 100 beds	1 Supervisor-Clinical 1 Supervisor-Admin.	Team 1-25 beds Team 2-25 beds Team 3-25 beds Team 4-25 beds	For each team 1 Team Leader 1 R.N. 1½ R.N.A.'s
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#### (b) Evening Nursing

Per 100 beds	1 Supervisor-Both	Team 1-50 beds Team 2-50 beds	For each team 1 Team Leader 1 R.N. 1½ R.N.A.'s
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#### (c) Night Nursing

Per 200-300 beds	1 Supervisor-Both	Team 1-50 beds Team 2-50 beds Team 3-50 beds Team 4-50 beds	For each team 1 Team Leader 1 R.N. 1½ R.N.A.'s
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According to those familiar with this system, it is possible that it might reduce nursing personnel requirements in acute general hospitals to the order of 80 per cent of current levels. In terms of nurses required, this is equivalent to reducing the days of active treatment care required from 545 hospital days per 1,000 to  $(545 \times 80)$  or 436. As an illustration of the application of this principle therefore, we will use 436 hospital days of care per 1,000 as the long-term base index of need for active treatment, general hospital based nurses, in comparison to the 1,572 days of care per thousand which forms our present index of need for such nursing services under the existing system. There is great need however, for further study of these nursing organizational concepts to make sure if we can

in fact achieve these changes and economies, and at what tempo they can be achieved.

**Chronic, Convalescent, Mental Hospital and Long Term Rehabilitation and Psychiatric Care in General Hospital "Days of Care" Added to Active Treatment Days**

What of other hospital based nursing activities? We do not feel that changes in the system of nursing care in chronic, convalescent, and mental hospitals would allow reduction of personnel by 20 per cent, since these institutions are not comparable to the active treatment hospital. There would almost certainly be an increase in the number of chronic and convalescent patients cared for in institutions other than acute general hospitals, with a resultant increase in the need for nursing care in these institutions. Team nursing might also contribute to increased efficiency of utilization of nurses in these institutions. We will use the present Ontario days as they are, therefore, to reflect nursing needs in these areas. The total number of hospital based days of care required, therefore—as an index of nursing personnel requirements—would be as follows:

**Hospital Days of Care Required Under an "Adjusted" Kaiser System**

**Hospital Days of Care  
Per 1,000**

Active Treatment	436
Chronic	43
Convalescent and Rehabilitation	355
Mental	888
	1,722 Total Hospital Days of Care per 1,000.

**"New" Total Days of Hospital Care Per 1,000 as a Percentage of Existing Days per 1,000**

How do these 1,722 days compare as a percentage of present O.H.S.C. plus Mental Hospital days of care per 1,000? This calculation is as follows:

$$\frac{1,722 \text{ (Kaiser adjusted)}}{1,970 \text{ (OHSC)} + 888 \text{ (Mental)}} = 60\% \text{ of present demand for hospital based nursing services in days of care per 1,000.}$$

This equation shows that the total days of care derived from all the foregoing considerations (1,722) is equal to only 60 per cent of 1967 O.H.S.C. plus Mental Hospital days.

If however, as is quite likely, the patients remaining in hospital under a Kaiser level of hospitalization, would have a higher intensity of illness, it is probably too severe a cutback to suggest that our present staff of hospital nursing personnel should be reduced to 60 per cent of current levels. *In order to allow for the higher intensity of care in general hospitals that might be required, therefore, for the purposes of this illustrative paper, an arbitrary level of 75 per cent has been assumed.* Additionally, this assumption takes into consideration the unknown increase in nursing care for additional beds in convalescent, chronic and rehabilitation hospitals, and nursing home beds. Since 80.9 per cent of present nursing personnel work in hospitals, this assumption means that  $(80.9 \times 75)$  or 60.7 per cent of total nursing personnel should work in a general hospital setting in the future.

### **Nursing Outside Hospitals**

We do not feel that we can institute a reduction in the number of days of care inside general hospitals without considering an expansion of nursing duties outside hospital walls. Table VI shows the present distribution and the manner in which some allowance should be made in the future for "out-of-hospital" functions.

This table shows that, at present, out-of-hospital nursing functions consume 19.1 per cent of nursing personnel, of which the largest segment is Public Health, which utilizes 4.7 per cent, followed by 3.6 per cent in Private Practice and 2.8 per cent in each of Nursing Education and in Doctors' Offices. *Since we do not know, at this very preliminary stage of our studies, just how these various segments should be increased,* we are simply indicating that the proportion of nursing personnel engaged in all these functions should be doubled. Some may more than double at the expense of others—but we cannot foresee at this stage just what this distribution will be. We know that the proportion of nurses in Public Health and those working in Doctors' Offices should probably much more than double. On the other hand, perhaps Private Practice and some other categories will diminish. The overall effect of this redistribution of the work force, however, will be that instead of having 80 per cent of nurses working "in" hospitals and 20 per cent working "out", the pattern will be more in the area of 60 per cent working "in" and 40 per cent working "out."

In the following section (Appendix B), we will see that the nursing personnel ratio (Degree, Diploma, and R.N.A.) should reach 1/135 by 1985-86. With a redistribution of the nursing work force as indicated above, this ratio of nurses to population should be adequate to meet our needs for the next 20 years. Before going into this in detail, however, it is necessary to examine the actual numbers of nurses in the province at the time, their rate of attrition, the immigration factor and the projected population of Ontario over the next 20 years. This is discussed in Appendix B.

TABLE I

## HOSPITAL DAYS OF CARE PER THOUSAND IN ONTARIO

Level of Care	Public and Private Hospitals		
	Total Days of Care	Per 1,000 Population	
	1965	1966	1967
Active Treatment including Psychiatric Care in General Hospitals and Significant Amounts of Convalescent and Chronic Care . . . . .	1,569	1,551	1,572
Convalescent Care and Rehabilitation . . . . .	44	45	43
Chronic Care . . . . .	356	348	355
SUB TOTAL . . . . .	1,969	1,944	1,970
Mental Hospital Care . . . . .	1,056	959	888
TOTAL FOR ALL LEVELS OF CARE . . . . .	3,025	2,903	2,858

Source: Annual Report of O.H.S.C., 1967, and Department of Health data.

TABLE II

## AGE DISTRIBUTION OF KAISER AND ONTARIO POPULATIONS

Age Group	Ont. Population	Kaiser Population	Ontario in Proportion to Kaiser Population
0-44	73.1%	73.8%	99.1%
45-64	18.8	21.9	85.8
65+	8.1	4.3	188.4
	100.0	100.00	

Source: Ontario population statistics and Kaiser Annual Report 1964.

TABLE III

## BEDS PER THOUSAND FOR SPECIFIED AGE GROUPS - ONTARIO

Age Group	Active Treatment	Obstetrical	Psychiatric	Total
0-14	2.63	0	.1	2.73
15-44	2.49	.60	.1	3.19
45-64	6.66	0	.1	6.76
65+	16.29	0	.1	16.39

Source: O.H.S.C.

TABLE IV

KAISER POPULATION BED REQUIREMENTS USING ONTARIO BED RATIOS

Age Group	Age Distribution	No. of People	OHSC Bed Ratios	Bed Requirements
0-44	73.8%	1,107,000	2.99	3,310
45-64	12.9	328,000	6.79	2,221
65+	4.3	64,500	16.39	1,058
		1,500,000		6,589 beds
	Total Requirements			

TABLE V

KAISER BED REQUIREMENTS USING THE SAME AGE DISTRIBUTION AS IN ONTARIO AND ONTARIO BED RATIOS

Age Group	Age Distribution	No. of People	OHSC Bed Ratios	Bed Requirements
0-44	73.1%	1,096,500	2.99	3,279
45-64	18.8	282,000	6.76	1,906
65+	8.1	121,500	16.39	1,991
	Total Requirements	1,500,000		7,176 beds

TABLE VI

PROPORTIONATE DISTRIBUTION OF NURSING PERSONNEL UNDER  
PRESENT AND FUTURE PATTERNS OF CARE

Category	1968 Per cent Distribution	Multiplier	Future Per cent Distribution
			60.7%
Hospital and Institution	80.9%	0.75	
Public Health	4.7		
Occupational Health	1.8		
School Health	.6		
Private Practice	3.6		
Nursing Education	2.8		
Doctors' Offices	2.8		
Other	.8		
Not Reported	2.0		
			100.0%
			98.9%

*Appendix B*

**BACKGROUND PAPER ON**

**NURSING SUPPLY, ATTRITION**

**AND TRAINING IN ONTARIO**



## APPENDIX B

### *Supply, Attrition and Training of Nursing Personnel in Ontario "ILLUSTRATIVE PAPER"*

A basic problem in evaluating the nursing manpower picture is the determination of how many nurses are actually working full-time in Ontario in 1967. The historical record shows the number of nurses on the Ontario Register, but about 40 per cent are either not resident in Ontario or not working. During the past three years, the Canadian Nurses Association has obtained information on those who are both resident and working—however, their figures of those who are working either full-time or part-time (an important element) apply to total registration, not to the Ontario resident core. If we take the proportions of full-time versus part-time that relate to the total registration, and apply them to the Ontario core, however, we obtain an estimate of the equivalent number of full-time Registered Nurses in Ontario. (Part-time—30 per cent, have been converted to full-time at the ratio of 2 for 1.)

In considering the whole body of nursing skills that are being applied on the Ontario scene, we cannot ignore the increasing number of Registered Nursing Assistants (R.N.A.'s) and the non-registered trained nurses, known usually as Graduate Nurses (or G.N.'s) who have entered the country as immigrants. The number of R.N.A.'s is known, and the number of G.N.'s *estimated* to be currently working in the province is *about* 3,000. If we add together what we know of the R.N.'s, R.N.A.'s, and G.N.'s, we find that we have an *estimate* of about 46,000 nurses working full-time in Ontario in 1967, which gives us a nurse-population ratio of 1/156. A summary of the make-up of the working nurse-population in Ontario during the past three years is given in Table I, on page 120.

The first column of Table I shows total Ontario registrations. These figures are relatively unimportant because so many nurses are non-resident or not working. The second column reduces the situation to "resident, working" nurses—but 30 per cent of this figure is made up of part-time nurses. A reduction of part-time nurses to full-time equivalents at the ratio of 2/1 produced column 3. Column 4 is an allowance for non-registered nurses (G.N.'s) estimated by rather round-about means. The initial size of this figure, included in our projections, is soon depreciated by the extensive attrition in the profession, an estimated 4,600 in 1967, and the number in the working nurse force in the future depends very much on the allowance for immigration, the source of most of these unregistered nurses. Column 5 shows the cumulative total registrations of R.N.A.'s for each year, and column 6 the grand total "Resident, Working, Full-time" nurse working force. Comparison of this grand total figure to the population, shows the most realistic nurse-population ratio figure that we can work out. This currently stands at 1/156 having shown a fairly rapid improvement from 1/176 in 1965.

We have grouped all the different kinds of nurses together at this stage in order to obtain this ratio. We will separate them again at a later stage in the discussion.

### Ratios in Other Countries

The vagaries of using a population ratio, as an indication of the degree of supply of any given category of manpower, has been discussed in other manpower papers. However, as an available statistic, it does, at least, have some merit. The situation in other countries is given in Table II, although we do not know if the figures of total nurses in these countries have been calculated in the same way.

If the Ontario ratio for 1967 was calculated without the inclusion of R.N.A.'s, our ratio would be 1/224, a not unfavourable position in comparison to most of the other countries cited, except Sweden which has a ratio of 1/193. It is not possible to give a realistic comparison for the other Provinces of Canada because of all the modifications which have to be made to the figures in order to get them on a comparable basis.

### The Most Recent Population Projections for Ontario

Quite a few different population projections have been issued by the

Department of Treasury and Economics in recent months—for both short-term and long-term use. For our purposes we have selected the short-term projection to 1975, issued in December 1968, and combined it with long-term projection C-M50, issued in January 1969. Both these projections assume fertility rates remaining constant at the 1967 level. The short-term projection assumes a net immigration rate of 30,000 per year from 1969 to 1975; however, the long term projection assumes an increase in this figure to 50,000 per year from 1976 onward. These two projections match very neatly at their joining point and give us a moderate-high projection up to 1991. The figures at 5 year intervals are as follows:

1971	—	7,703,000
1976	—	8,327,000
1981	—	9,155,000
1986	—	10,054,000
1991	—	10,967,000

These figures are somewhat higher than those which have been used previously. Accurate prediction of population levels, however, depends on many variables and is a somewhat precarious exercise.

### **Outside Sources of Nurse Manpower in Ontario**

Table III shows outside sources of nurse manpower in Ontario since 1961.

This table shows that Ontario received over 2,650 nurses from outside sources in 1968, and 2,439 in 1967. In 1967, about 38 per cent came from other provinces, 25 per cent from the United Kingdom, and 22 per cent from the Philippines. There has been a more or less continuous upward trend in all of these sources of supply during the 1960's—raising the question of to what extent this province should allow itself to rely on these sources. Last year's figure was more than double the 1,227 received in 1964.

In considering this matter, the Committee decided it would like to minimize reliance on nursing immigration in Ontario, particularly the inflow of nurses from other provinces. As a starting point in calculating an immigration "allowance" for Ontario, therefore, it was decided to take the average for the last seven years, excluding other Canadian Provinces, or an allowance of approximately 900 nurses per year. This figure is then gradually stepped down until we reach a level approximately equivalent to the number of nurses required at

the optimum ratio to look after an average net immigration figure that might be expected, given the ranges recently postulated by the Treasury Department.

In our calculations this level is reached in an "adjustment" period of nine years, during which we also are able to let current graduation programmes reach their fruition.

### Attrition in the Ontario Nursing Profession

Attrition in the nursing profession has always been suspected of being very high, but the figures to substantiate it have tended to be somewhat scarce. Even now we can only indicate—not prove—what we think this attrition to be, because so many estimated figures are involved. As with doctors and dentists, we cannot pinpoint all the sources of loss—all we can do is to indicate the approximate proportions of these losses. Many nurses simply disappear each year into other professions, into marriage, or abroad—and do not show up in the registrations the following year. Table IV shows our estimated approach to this problem.

Table IV, once again, cannot be taken as accurate, but only as an approach to trying to find out what we want to know. The base figures in the first column are all estimated to a greater or lesser extent. The base figures for 1965, 1966, and 1967—24,623, 27,674 and 28,943—will all be found in Table I of this report, but the base figures for earlier years are all estimated at 53 per cent of total registrations—the relationship which seems to hold good for 1965, 1966, and 1967. Assuming the relative accuracy of these base figures, one can then add in the nursing school output and out-of-province sources of nurses to see how many we should have, in comparison to how many we actually have, at registration time the following year. The numerical loss can then be compared to the average number of nurses in the year and a percentage attrition rate arrived at, as shown in the last column. In individual years, this appears to fluctuate considerably, but the overall average for the four years for which we have figures shows an average attrition of 10.1 per cent—which we consider to be a not surprising figure in view of our general knowledge of the situation.

In our projections, we look at two situations: one, using a rounded 10 per cent attrition factor for the period up until 1991-92, and a second possibility in which a "Career Incentive" factor designed to keep nurses in the working force is applied at the rate of

one fifth of one per cent per annum starting in 1973-74, which should reduce attrition to approximately 6 per cent by the 1990's.

### **The Projected Input of Nursing Personnel into the System**

Before considering the projected over-all supply of nursing personnel, which is a function of both attrition, input, and population increase, we must look at the total input into the system.

Current graduation programmes call for the production of nursing personnel at three levels—the Degree Nurse (Basic and Post-Basic), the Diploma Nurse, and the R.N.A. The objective has been that the combined class size of Basic Degree and Diploma Nurses starting in any one year be built up to the 5,100 level and that 2,400 R.N.A.'s be trained in addition. In Table V, the build-up of the class sizes of Degree and Diploma nurses is shown in column 3, the 5,100 target being reached in 1972-73.

It will be noted that, in Table V, the full fruition of these class sizes, in terms of graduates, is not realized until 1975-76 with the completion of the fourth year of the first full (585) Basic Degree class. By that time the total number of nursing personnel being infused into the system will reach approximately 7,074, as shown in the bottom line of column 8. This figure is the sum of the Degree, Diploma, R.N.A. and "calculated" immigration figures. The "calculated" immigration figure shown (400) is the number of nurses required to look after an average net immigration of 60,000 persons per annum at a ratio of one nurse to every 150 persons. Having determined both input and attrition rates for the nursing profession, we are now in a position to look at the projected supply for the province.

### **The Projected Supply of Nurses in Ontario**

The first projection which we will examine starts in 1968-69, takes into account the build-up of the infusion of new personnel from 5,706 in 1968-69 to 7,074 in 1975-76, and assumes a continuing attrition rate of 10 per cent per annum. This is shown in Table VI.

It will be noted from Table VI that, if we assume a continuing rate of attrition of 10 per cent per annum, then the current estimated output of nursing schools plus a calculated immigration level of 400 is adequate to maintain a nurse to population ratio of at least 1/150 until the mid-eighties. After 1986, the ratio begins to

recede above 1/150, as the rate of input (7,074) is unable to keep pace with population increase. It should be remembered however, that we are assuming a much lower rate of immigration (400) than actually exists, simply on the principle that we should not rely on immigration.

In the table, column 1 shows the estimated output of nursing personnel infused into the system each year. Columns 2, 3 and 4 show the consumption of this output for that year. Column 2 shows the number of nurses used to deal with population increase. Column 3 shows the number of nurses needed to replace a loss of 10 per cent of the previous year's total number of nursing personnel. Column 4 shows the number of nurses left over to improve the ratio (this can sometimes be negative). Column 5 shows the total number of active, resident, full-time nursing personnel (R.N. and R.N.A.) after the initial number at the beginning of the year (or end of the previous year) has had columns 2 and 4 added on to it. The division of this figure into the projected population (column 6) gives the ultimate nursing personnel to population ratio (column 7).

### **The Projected Supply of Nurses in Ontario Assuming a Lessening Rate of Attrition as the Result of the Introduction of Career Incentive Measures**

This second table is the same as Table VI except for the fact that we introduce a "Career Incentive" factor which is estimated to have the effect of a lessening of attrition at the rate of one fifth of one per cent per year, beginning in 1973-74. The net effect of this factor is to reduce attrition to about 6 per cent (from 10) by 1992. Table VII appears on page 126.

It will be noted that, under the circumstances of decreasing attrition, the nursing personnel to population ratio (column 7) continues to improve throughout the whole period, instead of receding after 1985 as in Table VI. Although the rate of improvement is slow in the eighties, it would continue to speed up since the residual for ratio improvement (column 4) begins to get larger again after 1982-83, after having fallen to 455. This indicates that, under the circumstances of decreasing attrition, the annual infusion of 7,074 nursing personnel is more than enough to maintain the ratio at 1/150. The question is, however, can we achieve this reduced attrition?

## **Summary**

It would appear that the truth of the nursing personnel output situation may be somewhere between Tables VI and VII. Table VI shows that an output of 7,074 will not be sufficient after 1985, whereas Table VII shows that it may be too much if the attrition rate can be reduced. On balance, therefore, it would appear that the present target of 7,074 may not be too unreasonable a figure.

TABLE I  
MAKE-UP OF THE WORKING NURSE POPULATION OF  
ONTARIO, 1965-67

Year	Registered Nurses				R.N.A.'s 5	Grand Total 6	Population 7	Ratio 8
	Total 1	Resident Registration & Working 2	Full-Time Equivalents 3	Non Registered 4				
1965	44,963	28,969*	24,623	3,000	10,959	38,582	6,788,000	1/176
1966	50,721	32,557	27,674	3,000	12,223	42,897	6,961,000	1/162
1967	54,492	34,050	28,943	3,000	13,988	45,931	7,149,000	1/156

\* Adjusted for non-reporting nurses.

Source: Research Unit, C.N.A. and College of Nurses of Ontario Annual Reports.

TABLE II  
NURSE-POPULATION RATIOS IN OTHER COUNTRIES

Country	Year	Nurse-Population Ratio
Sweden	1964	1/193
Denmark	1965	1/253
United States	1963	1/340
Canada	1963	1/375
United Kingdom	1964	1/402
New Zealand	1964	1/793
Philippines	1965	1/1349

Source: W.H.O. Reports

TABLE III  
OUTSIDE SOURCES OF NURSE MANPOWER IN ONTARIO  
1961-67

YEAR	TOTAL		Other Provinces		United States		United Kingdom		Philippines		Other	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1961	1304	100	623	47.7	64	4.9	415	31.8	29	2.2	174	13.3
1962	1393	100	651	46.7	70	5.0	436	31.3	81	5.8	155	11.1
1963	1749	100	775	44.3	70	4.0	539	30.8	179	10.2	186	10.6
1964	1227	100	721	58.8	48	3.9	293	23.9	64	5.2	101	8.2
1965	1487	100	745	50.1	66	4.4	384	25.8	140	9.4	152	10.2
1966	1986	100	835	42.1	76	3.8	439	22.2	418	21.0	218	10.9
1967	2439	100	913	37.5	108	4.4	618	25.3	530	21.7	270	11.1
1968	2650	100	—	—	—	—	—	—	—	—	—	—

Source: Annual Reports — College of Nurses of Ontario

TABLE IV  
ATTRITION IN THE ONTARIO NURSING FORCE

YEAR	Resident Working Fulltime Nurses (RN)	Nursing School Output	All Non- Ontario Sources	Theo- retical Total	Additions in Year		Actual Numbers Following Year	Loss in Numbers	Average Nurses in Year	Attrition Rate (Per cent)
1963	23,315	2,123	1,749	27,187	24,770	2,417	24,043	10.1		
1964	24,770	2,428	1,227	28,425	24,623	3,802	24,697	15.4		
1965	24,623	2,568	1,487	28,678	27,674	1,004	26,149	3.8		
1966	27,674	2,512	1,986	32,172	28,943	3,229	28,309	11.4		
1967	28,943								Average Attrition	10.1%

TABLE V

ESTIMATED CLASS SIZES, NUMBER OF GRADUATES AND  
IMMIGRATION LEVELS, 1967-68 to 1972-73

YEAR	Estimated Class Size			Estimated Graduates				Total Infusion 8
	Basic Degree 1	Diploma* 2	Total 3	Basic Degree 4	Diploma 5	R.N.A. 6	Calculated Immigration 7	
1967-68	192	3,355	3,547	62	2,794	1,466	900	5,222
1968-69	240	3,901	4,141	95	2,811	2,000	800	5,706
1969-70	368	4,013	4,381	141	3,269	2,100	700	6,210
1970-71	439	4,182	4,621	167	3,363	2,200	600	6,330
1971-72	535	4,326	4,861	217	3,505	2,300	500	6,522
1972-73	585	4,515	5,100	308	3,625	2,400	400	6,733
1973-74	585	4,515	5,100	368	3,784	2,400	400	6,952
1974-75	585	4,515	5,100	448	3,784	2,400	400	7,032
1975-76	585	4,515	5,100	490	3,784	2,400	400	7,074

\* The Diploma Figures include the Post-basic nurses who must be recirculated to obtain their degrees.

TABLE VI

 EFFECT ON NURSE-POPULATION RATIO OF ESTIMATED PLANNED  
 OUTPUT OF NURSING PERSONNEL AND A CONTINUING 10% RATE OF ATTRITION

YEAR	Annual Infusion	Population Increase	Distribution of Infusion for To Replace Attrition	Ratio Improvement	Total Nursing Personnel	Projected Population (000's)	Ratio
1	2	3	4	5	6	7	
1968-69	5,706	1,032	4,656	18	47,610	7,471	1/156
1969-70	6,210	1,032	4,761	417	49,059	7,585	1/155
1970-71	6,330	731	4,905	694	50,484	7,703	1/153
1971-72	6,522	756	5,048	718	51,958	7,823	1/150
1972-73	6,733	769	5,196	768	52,495	7,946	1/149
1973-74	6,952	788	5,350	814	55,097	8,073	1/147
1974-75	7,032	814	5,510	708	56,619	8,202	1/145
1975-76	7,074	827	5,662	585	58,031	8,327	1/143
1976-77	7,074	801	5,803	470	58,302	8,492	1/143
1977-78	7,074	1,058	5,930	86	60,446	8,658	1/143
1978-79	7,074	1,064	6,045	35	61,475	8,824	1/144
1979-80	7,074	1,064	6,148	-138	62,401	8,990	1/144
1980-81	7,074	1,064	6,240	-230	63,235	9,155	1/145
1981-82	7,074	1,064	6,324	-314	63,985	9,334	1/146
1982-83	7,074	1,147	6,399	-472	64,660	9,514	1/147
1983-84	7,074	1,154	6,466	-546	65,268	9,694	1/149
1984-85	7,074	1,154	6,527	-607	65,815	9,874	1/150
1985-86	7,074	1,154	6,582	-662	66,307	10,054	1/152
1986-87	7,074	1,154	6,631	-711	66,750	10,236	1/153
1987-88	7,074	1,167	6,675	-768	67,149	10,418	1/155
1988-89	7,074	1,167	6,715	-808	67,508	10,601	1/157
1989-90	7,074	1,173	6,751	-850	67,831	10,784	1/159
1990-91	7,074	1,173	6,783	-882	68,122	10,967	1/161

TABLE VII

EFFECT ON THE NURSE-POPULATION RATIO OF ESTIMATED PLANNED  
OUTPUT OF NURSING PERSONNEL AND A DECREASING RATE OF  
ATTRITION REACHING APPROXIMATELY 6 PER CENT IN 1991

YEAR	Annual Infusion	Population Increase	Distribution of Infusion for Attrition	Ratio Improvement	Ratio	Total Nursing Personnel	Population (000's)	Ratio
	1	2	3	4	5	5	6	7
1968-69	5,706	1,032	4,656	18	47,610	7,471	1/156	
1969-70	6,210	1,032	4,761	417	49,059	7,585	1/155	
1970-71	6,300	731	4,905	694	50,484	7,703	1/153	
1971-72	6,522	756	5,048	718	51,958	7,823	1/150	
1972-73	6,733	769	5,196	768	53,495	7,946	1/149	
1973-74	6,952	788	5,243	921	55,204	8,073	1/146	
1974-75	7,032	814	5,299	919	56,937	8,202	1/144	
1975-76	7,074	827	5,352	895	58,659	8,327	1/142	
1976-77	7,074	801	5,397	876	60,336	8,492	1/141	
1977-78	7,074	1,058	5,431	585	61,979	8,658	1/140	
1978-79	7,074	1,064	5,454	556	65,599	8,824	1/139	
1979-80	7,074	1,064	5,470	540	65,203	8,990	1/138	
1980-81	7,074	1,064	5,477	533	66,800	9,155	1/137	
1981-82	7,074	1,064	5,478	532	68,396	9,334	1/136	
1982-83	7,074	1,147	5,472	455	69,998	9,514	1/136	
1983-84	7,074	1,154	5,460	460	71,612	9,694	1/135	
1984-85	7,074	1,154	5,442	478	73,244	9,874	1/135	
1985-86	7,074	1,154	5,420	500	74,898	10,054	1/134	
1986-87	7,074	1,154	5,393	527	76,579	10,236	1/134	
1987-88	7,074	1,167	5,351	556	78,302	10,418	1/133	
1988-89	7,074	1,167	5,324	583	80,052	10,601	1/132	
1989-90	7,074	1,173	5,283	618	81,843	10,784	1/132	
1990-91	7,074	1,173	5,238	663	83,679	10,967	1/131	

*Appendix C*  
**BACKGROUND PAPER ON**  
**THE NURSE AS AN**  
**ADJUNCT TO THE DOCTOR**



## APPENDIX C

### *The Nurse as an Adjunct to the Doctor*

This part of the report deals with those members of the nursing profession who work and function in close co-operation with the physician in aiding and assisting him to provide health care for his patients. Further to identify this group of nurses, we may state that these nurses work in the physician's office, in special hospital settings, or in special clinical team arrangements such as rehabilitation medicine or mental health care units. In such work arrangements, the nurse continues to practise nursing yet she becomes more specialized through extra training (formal and/or in-service) and is designated by such familiar terms as "office nurse," "operating room nurse," "psychiatric nurse," "rehabilitation care nurse." Nurses so titled experience a closer, somewhat tenured working relationship with the physician and other members of health care delivery teams than do general duty hospital nurses, and usually gain a greater sense of involvement and participation. The office nurse, of those mentioned above, is the physician's employee while the others are employees of hospitals or special clinics.

#### **The Office Nurse**

The nurse who works as an employee of the physician is usually titled "the office nurse." The physician's office is her natural habitat. She performs a variety of work which she learns while on-the-job, there being no formal training programmes. She provides:

- a. general nursing assistance to the patients;

- b. assistance to the physician in medical matters (recording basic data; performing a little office lab. work; taking ECG.'s);
- c. regulation of patient traffic flow (making appointments; booking X-Ray and other lab. work; arranging hospital accommodation); and
- d. general office administration (accounts, mail sorting, typing, etc.)

The office nurse may work full- or part-time. She may be shared by two doctors in the same office. There may also be a stenographer-receptionist to do some of the work outlined above, leaving the nurse free to attend more closely the physician and patient in medical and nursing matters.

In Ontario there is beginning to appear a new kind of office nurse. At the Family Practice Training Clinic of the Department of Family Practice, McMaster University, Dr. R. McAuley and Miss S. Smale are working out a new role for the nurse who tentatively is being referred to as "the Family Nurse Practitioner." Here the nurse performs work in support of the physician and acts as a junior colleague. She provides well-baby and ante-natal care, elaborates the physician's instructions to patients on such matters as drug therapy, dietetics, and personal care, and manages simple, common ailments. The programme is in the early stages of development and much work has yet to be done in setting guidelines, working hours, salary schedules, and in formulating base-line work policies.

As well, four Burlington physicians in a small group practice wish to hire four nurses for similar employment as outlined above. They wish to research their present patterns of general practice (each has the traditional office nurse working with him) and re-evaluate their work patterns following the introduction of the new type nurse.

The Family Practice clinic at the Toronto Western Hospital is similarly moving towards the introduction of the new type office nurse or nurse-practitioner-associate (no title or name for the nurse has yet been established). The physicians involved here feel they can introduce this nurse sometime late this Spring and are making plans for researching the role and activities of this new nurse.

As is shown below, the majority of medical practitioners practice without the services of an office nurse. Individually these physicians have personal reasons for working without nurse assistants. In spite

of all that has been written in medical journals and other works, extolling the merits of employing an office nurse, the number of physicians who do so grows slowly. It is, therefore, perhaps reasonable to suggest that, although the new-type nurse assistant or associate exists today, the demand for her and her services will be very slow to appear.

In Ontario in 1968, there were 1,273 nurses employed in doctors' and dentists' offices, of whom only very few were working with dentists. (This represented 3.1 per cent of the total working nurse work force.) In this group 95 per cent held diploma standing only, 4.8 per cent held additional qualifications beyond diploma and 0.2 per cent held baccalaureate degrees in nursing. The average age was 36 (32 for all Ontario nurses). If the general attrition rate of 10 per cent per annum is applied to this group,\* it is apparent that there is a demand, annually, for some 130 nurses, which is the equivalent of having to graduate that many to staff these posts. There are ample reasons to suggest that this annual demand will grow (a) absolutely from population increase and (b) proportionately as old and new patterns of physician practice (group practice, health team arrangements) increase in scope and/or emerge as the case may be.

It is interesting to note that, according to Department of National Revenue Statistics, there were about 6,000 doctors engaged in "active" private practice in Ontario in 1967. This figure excludes the salaried group and those whose incomes are below the taxable level—an indication of inactivity. It appears, therefore, that approximately 4,700 (6,000-1,273) practice without nurses in their direct employment. With the anticipated proportional and absolute growth, it is not idle speculation to suggest that demands for office nurses will grow. Given a population of 9,000 active physicians in private practice by 1980, which is a 50 per cent gain from 1967, and a similar percentage growth in group or team arrangements (40 per cent of 6,000 or approximately 2,400 physicians were practicing in groupings of two or more in 1967) we can forecast in 1980 a total work force of some 2,500-3,000 office nurses. Meeting this increasing annual demand suggests an extra 145 Diploma graduates will have to be supplied each year. If to this, the number lost by attrition each year is added, the province has a requirement to graduate an additional number of nurses rising from 300 in 1970 to over 400 by 1980 in order to meet the extra demands for nurses in

\* It may well be that the attrition rate for nurses working in doctors' offices or special units is less than that for Ontario nurses in general.

doctors' and dentists' offices. It is quite possible, however, that this number can be made up from reduced demands for hospital nursing staff.

It is further possible that the above estimated total of 2,500-3,000 office nurses employed in 1980 will be exceeded considerably. Against these possible extra demands by physicians on total nurse manpower may be placed the wholly unsubstantiated (from the statistical point of view) statement that many nurses are drawn from the pool of inactive nurses in the community for office employment and, in fact, are not shifting from hospital general duty; were they not working in doctors' offices they would not otherwise be employed. It is difficult, perhaps impossible, to know if these two points cancel each other out, so meagre is our present data.

### Clinical Specialist Nurses

Turning to the other groups of nurses who have been identified as working in close harmony and association with physicians in team or unit arrangements, we have little information with which to work. These are nurses who are engaged in clinical specialties in hospitals and health care facilities, who in many instances have higher qualifications beyond diploma standing or enjoy a close work relationship with physicians and other health team personnel and as such will be in ever increasing demand by physicians and hospital and clinic administrators. Regardless of what happens to the demand for general duty nurses as a result of altered bed to population ratios, of the widespread introduction of ward managers or team nursing practices in hospitals, these specialized and sophisticated and team arrangements, providing more efficient professional manpower utilization, become more common and widespread.

The places of employment for these 'nurses together with approximate numbers are as follows:

Occupational Health	800 <sup>1</sup>
Operating Room	3,500 <sup>2</sup>
Psychiatry (in hospitals and clinics)	200 <sup>3</sup>
	<b>TOTAL 4,500</b>

<sup>1</sup> Countdown. Canadian Nursing Association, 1969. Calculated on the basis of 7.7 per cent of 46,215 nurses—7.7 per cent being the proportion of nursing team devoted to operating room services.

<sup>2</sup> Hospital Statistics. D.B.S. 83-212. 1966.

<sup>3</sup> Mental Health Statistics. D.B.S. 1966.

Another important segment of nursing is rehabilitation care. There are no figures available as to numbers employed.

For these nurses we can apply the 10 per cent attrition rate and suggest that 450-550 nurses each year will be required to be added to the work force to keep pace with demand. Considering a population increase of 25 per cent by 1980, and without considering other future possible developments in medical and nursing care, it may well be that there will be at least 5,000-6,000 such nurses so employed. The annual demand in the 70's, as expansion takes place, can be estimated at about 100. If this figure is added to the first above (nurses required to replace loss due to attrition) it may be seen that between 550 and 650 ( $450 + 100$  to  $550 + 100$ ) nurses will be required annually to 1980 so that adequate staffing in these specialized areas can be maintained.

In the areas identified above, therefore, where nurses are working as adjuncts to physicians and are in unit or team practice arrangements, it is reasonable to assume that demands will increase likely beyond the conservative estimates offered above.

### Other Nurses

The reader might suggest that public health nurses act as adjuncts to the Medical Officer of Health and, in turn, the practising physician. This is so. However, the concept and practice of community team nursing is to be researched soon in Ontario and may have a marked future effect on the numbers of specially prepared nurses required for this field. Again, the role of the public health nurse appears to be altering in that her scope and range of activity are enlarging. It is difficult in the absence of data to be precise in any way. It is also important to note that, to date, stimulus to public health nursing has not come from the practising physician in general (as it has for nursing in the other areas identified above); whether this will be so in the next decade remains to be seen, but such stimulus occurring could increase demands beyond recognition. An example of such is the attachment of public health nurses to doctor's practices. Dr. Hutchison, Medical Officer of Health, London, has two nurses attached to physicians' practices; Dr. Mosely, Medical Officer of Health, East York-Leaside, has one nurse on attachment; Dr. Douglas, Medical Officer of Health, Ottawa, has deployed two nurses in this manner. Evaluation of these pilot projects is progressing. It is much too early to suggest that these arrangements represent a trend.

To sum manpower estimations then, it may be stated that nurses working as adjuncts to physicians will be required annually during the next decade in the following approximate numbers (at the median point in this period):

i)	to maintain staff against attrition	745
ii)	to fill demands for expansion	245
	<b>TOTAL</b>	<b>990</b>

This figure of approximately 1,000 represents the annual output of about 17 nursing schools (60 students to each graduating class).

Finally, it is to be noted that all 1,000 nurses will be at least Diploma qualified, that an unknown number (perhaps 75) will require extra training, and that a few (perhaps 8) will require baccalaureate preparation. Having said this, it is obvious that changes in basic nurse training requirements and new medical scientific and nursing health care advances translated into demand could escalate both length, intensity, and cost of training, and the absolute numbers of these nurses required in the decade ahead.

*Appendix D*  
**BACKGROUND PAPER ON**  
**NURSING ATTRITION AND TURNOVER**



## APPENDIX D

### *Nursing Attrition and Turnover*

Supply and input is only one aspect of nursing manpower. Failure to consider other factors may result in a system where outflow of trained personnel equals the annual infusion. The factors affecting nurse manpower are numerous.

#### **Nursing is a Female Occupation**

Nursing, like teaching, is predominantly a female occupation. Any female occupation is influenced by the attitude of society toward education of women and the employment opportunities available for women. Female occupations are characterized by an attachment to the labour force that differs from men. At any one time, large numbers who are trained are not working. We are at present experiencing a change in employment pattern of women. The Department of Labour states:

*There is a tendency for women to re-enter or remain in the labour market after marriage. For example between 1959 and 1967 the labour force participation of women rate for married women increased from 18% to 28.3%. In 1967, married women constituted 53.3% of the labour force and the proportion of women 14 years of age and older on the labour force rose from 23.4% in 1953 to 33.8% in 1967. In the post-war period the proportion of women 25-44 years of age in the labour force rose from 23.1% to 35.7% and those from 45-64 years of age from 17.2 to 35.1%.\**

\* Canada Year Book, pg. 757.

There has been an increase in the percentage of employed nurses who are married, the majority working part-time. We have not yet adjusted the institutional structures to accommodate the needs of married women. The Survey of Ontario Nurses documents the problems of child care, the negative influence of present income tax regulations, the difficulties in obtaining work for less than a full day, the problems relating to rotation of times of duty, and the general lack of incentives.

## Roles and Relationships of Categories of Personnel

Nursing differs from other occupations in that it already has three categories of personnel; the degree nurse, the diploma nurse, and the nursing assistant. It seems a paradox that the nouns "nurse" and "nursing" should be applied indiscriminately to a wide variety of health care activities, and to an occupation that includes some of the least-educated members of society (such as aides and orderlies) and some of the most educated persons. Most professions define the profession in terms of their highest prepared people. This is not so with nursing which is struggling to define a role for and to educate a better prepared practitioner. The frequency of the question "What can the degree prepared nurse do that the diploma nurse can't?" suggests the degree of success. In contrast to the slow increase in the numbers with baccalaureate preparation there has been a marked increase in the number of registered nursing assistants. At the same time, the educational programme of the diploma nurse is undergoing change, in method of control, length of programme, and content. Decisions about these changes are by no means unanimous and the wisdom of a particular decision may frequently be questioned. The failure to resolve the relationship between this variegated educational structure and a variegated utilization pattern contributes to the uncertainty and confusion that prevails in the relationships among the categories of nursing personnel. The input into the system and the direction of the output are both influenced by these relationships.

New roles for the nurse introduce new interdependent relationships within the categories of nursing personnel and other health workers.

## Rewards

Individuals are attracted to occupations by the rewards they expect from becoming a member and expect such rewards to be positively related to investments. There are many dimensions to a reward

system: sense of achievement, challenge, satisfaction, approval, status prestige, financial, and others.

Nursing salaries have traditionally been low. We need complete data for comparison with other occupations requiring post-secondary school education. The RNAO Newsletter of January/February 1969 carries the following item:

*We read in the Sudbury Star that the contract newly signed by the employees of three Loblaw Stores and their employer set a minimum salary for female clerks at over \$500.00 per month. There is noting in the contract that requires full secondary school education and 3 years' professional preparation in addition.*

Salary differentials within the categories of personnel no doubt influence to some degree the choice of educational programme. If an individual finds out that, upon completion of a nine month course for a registered nursing assistant, she can earn approximately three quarters as much as a registered nurse after a three year course, she may select the assistant's course. Twenty-nine per cent of the students admitted to nursing assistant programmes in 1968 had sufficient educational qualifications to enter a school of nursing and 45.7 per cent of the admissions to diploma schools of nursing had seven or more grade XIII credits (university entrance).\*

Nursing is one of the few female occupations where the largest percentage of its practitioners provide service twenty-four hours a day, seven days a week. This group of practitioners is lowest in the status hierarchy and reward system. The general duty nurse can advance only by entering the administrative hierarchy. The education of the diploma nurse prepares her for the patient care role but the organizational structure for providing care does not provide rewards for doing so. New organizational patterns are slowly emerging but too little is known about the conditions necessary to make it possible for the nurse to nurse.

## Recruitment

Recruitment into the profession and into employment are of concern. There are some indications of trouble spots.

\* Background material for Blueprint Committee Meeting, College of Nurses of Ontario.

## Recruitment into Nursing

The report of "Women University Graduates in Continuing Education and Employment" states that nursing is steadily becoming less popular.\* Also, while enrolment in schools of nursing has increased 42 per cent between 1963 and 1967, the per cent of enrolling eligible female graduates has fallen from 9.2 per cent to 8.4 per cent.

## Recruitment and Employment

Table I shows the mean turnover rate of full-time professional nursing personnel. We lack information about factors operating to influence this. We also lack information about the number of nurses who are employed but not in nursing.

The highest mean turnover rate is for the general duty nurse in large hospitals. Nursing Directors are next, followed by supervisors and head nurses. There is variation in turnover rate within each group according to size of hospitals. The implications of a high turnover rate are far reaching. The actual loss in nursing manhours is most significant, and the cost tremendous. It has been estimated that the measurable costs of replacing a nurse is approximately \$500.\*\* This does not consider the costs in time and effort to orient a new employee, or their reduced effectiveness during the orientation period. Stabilizing the employment patterns would alter the nurse manpower situation.

\* Women Univ. Graduates in Continuing Education & Employment. P. Cockburn, 1966, University of Toronto Bookstore.

\*\* Murray Melbin and Doris L. Taub. "The High Cost of Replacing a Nurse." *Hospitals*. October 16, 1966.

TABLE I  
MEAN TURNOVER RATE OF FULL-TIME PROFESSIONAL  
NURSING PERSONNEL IN PUBLIC GENERAL HOSPITALS  
BY CATEGORY OF PERSONNEL AND TYPE OF HOSPITAL  
ONTARIO 1966

	Beds	1-9	10-24	25-49	50-99	100-199	200-299	300-499	500-999	1000+
TOTAL										
Nursing Directors	15.84	—	—	9.75	22.44	15.62	13.79	21.62	10.52	10.71
Nursing Supervisors	14.51	—	66.66	10.25	14.81	12.64	17.49	13.58	12.90	17.91
Head Nurses	13.59	—	—	5.00	10.92	19.11	14.74	12.02	14.84	10.37
General Duty	58.15	—	37.20	44.22	47.03	50.05	59.77	61.13	61.35	59.96

Source: Countdown 1968. Canadian Nurses Association.













